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AS APPLIED TO ACUTE DISEASE.

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HYDROPATHY

AS APPLIED TO ACUTE DISEASE.

Illustrated by Cases.

BY

T. R. ARMITAGE, M.B. Lond. M.R.C.S.



LONDON:
JOHN CHURCHILL, PRINCES STREET, SOHO.
MDCCCLII.

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INTRODUCTION.

I PURPOSE giving in the following pages an account of some of the cases of acute disease, which I was so fortunate as to be able to treat by cold water in the course of the year 1850.

The reader will at once perceive that I can boast of no great experience in this method. I certainly should not yet have ventured on publication, had it been probable that further opportunity would be afforded me of testing the value of cold-water treatment in acute disease for a longer period, and on a more extensive scale.

Considering, however, that such opportunities as I enjoyed in Berlin, in 1850, may never occur again, and as many of my friends have expressed a wish to have a full account of my hydropathic practice in the Charité Hospital there, after con-

siderable hesitation, I have resolved to publish the results of my present experience, imperfect as it is, and trust that some future writer may be able to do more justice to the subject than is possible for myself.

Towards the close of the year 1849, I left England for the purpose of visiting all the great Continental hospitals, and of ascertaining, not in a cursory manner, but as fully and completely as possible, the methods of treatment pursued in them, and of carefully observing and noting their agreement or disagreement with our own.

In the course of this inquiry, I arrived in Berlin in January, 1850, and soon attached myself principally to the Charité Hospital there.

The great reputation which Professor Schönlein justly enjoys, attracted me in the first place strongly to the Charité, and here I had the good fortune very soon to become intimately acquainted with Dr. Traube, Professor Schönlein's assistant.

With this gentleman, I was enabled fully to satisfy my thirst for information respecting the state of German medical science and practice. No one is better able to explain and defend them, and no one could listen with greater

candour to objections I ventured to bring forward, or discuss them with greater liberality.

I therefore soon established myself almost entirely at the Charité.

The treatment of typhus fever by so eminent a physician as Schönlein engaged my attention in an especial manner, for in all the great cities and towns in Germany, Berlin, Frankfort, Dresden, Vienna, this disease is always more or less prevalent, and is sometimes dreadfully fatal, and interesting cases are almost always to be found in their large hospitals.

I had another powerful motive impelling me to give my best attention to the remedies employed in Germany against typhus, for during the winter of 1847—1848, while physician's assistant in one of the large London hospitals, I was not satisfied with the success of any of the usual methods of treatment, compared, at least, with the results obtained by Dr. Currie, as detailed in his admirable work on the treatment of fever by cooling the surface of the body. I had much wished for a good opportunity of testing, not only Currie's practice, but also the effects of the treatment recommended in more

recent hydropathic publications, in acute disease, and it was afforded me sooner than I could have hoped. Dr. Traube, with the freedom from prejudice which distinguishes him, offered me his valuable assistance.

Professor Schönlein very kindly gave his consent to our experiments being carried on in the hospital during the vacation, and after I had paid a short visit to Gräfenberg, to be initiated in the mechanical processes practised there, I returned to Berlin, and with Dr. Traube as coadjutor, I engaged in the prosecution of this, to me, new and most interesting inquiry, with all the zeal, but, at the same time, I hope with all the circumspection, that the case required.

It may not be uninteresting to mention a circumstance of which I did not become aware until I had been for some time engaged in my observations, and which will account for the readiness with which the first physician in Berlin, and perhaps in Germany, entered into our views; as also for the perfect state of the bath arrangement in the hospital, without which many difficulties in carrying out our plans would have occurred daily.

Dr. Horn, the father of the present director of the hospital, was director and physician-in-chief during the early part of the present century.

After the calamitous retreat of the French from Russia, in 1813, not the least misfortune that befel the survivors was the fearful typhus which broke out among the troops. At first it appeared in the Lazarettos, where the sick and wounded were crowded together. As the epidemic advanced, it became more deadly in its character. It spread by contagion, first to the inhabitants of the houses in which those sick soldiers were quartered who could find no room in the over-crowded Lazarettos, and from these it soon spread over the whole town. Many cases were scarcely inferior to the plague in intensity, patients being carried off in twenty-four hours after the first outbreak of the disease. The mortality among the medical men and attendants on the sick was frightful.

Most of the cases were characterized by extreme and early depression of strength, with great stupor, and on post-mortem examination (which was but too often obtained), the appearances usually met with in the bodies of typhous

patients were found—ulceration of Peyer's patches, an enlarged and rotten spleen, &c. To stay the ravages of this scourge, Horn determined to follow the plan of treatment recommended by Dr. Currie, both as regarded the free admission of cold air into the wards, and the employment of the cold affusion. The results were most satisfactory, and fully confirmed Dr. Currie's experience. The number of the sick, however, was so great, that the treatment was necessarily rough, and no new facts were elicited; yet is Horn's narrative of the epidemic full of interest, as quite confirming the statements of Currie.

Something of this method of treatment has been, ever since Horn's time, continued at the Charité, but the administration of the baths was left too much to the discretion of the bath servants and nurses, so that at the time when I arrived at Berlin, the method had so degenerated that it could scarcely be recognised. A very powerful douche had been substituted for the much more troublesome practice of affusion. I have frequently seen this allowed to fall for several minutes together on the head of the unfortunate patient. It is no wonder, then, if

such a method should frequently be unsuccessful, and that the whole method should fall into disrepute. I have been told by the bath-master, that he has seen several cases of death while the patient was actually under the douche.

The Charité Hospital contains 1000 beds, of which about 300 are set apart for internal complaints. There are two clinical departments, one under the direction of Professor Schönlein, the other under that of Professor Wolf. Each department contains about forty beds, of which rather more than one half is destined for male, the rest for female patients. The wards are large, roomy, and clean. The bath arrangements are excellent. The patients applying for admission, or sent into the hospital from the town, are first taken into a reception-ward, where they are examined by the assistant to the clinical professor. If, in his opinion, the case is one of sufficient interest, the patient is removed to one of the clinical wards. Cases of less interest are transferred to other wards, which are not used for the instruction of the students of the university. The two clinical

professors have the right of admission of patients to their respective wards on alternate days; consequently, each clinical department has the power of selecting forty of the most interesting out of 150 medical cases. When it is considered that all the cases in the hospital must be so serious as to preclude the possibility of their being treated out of the house, it will easily be understood that as fine material for observation is presented as could be wished. Professor Schönlein most liberally placed his clinical wards at the disposal of Dr. Traube, during all the vacations of the year 1850, which made up altogether a period of about four months; and during the whole of this time he left us so completely at liberty, that he never even suggested a single modification in our plans of treatment. Dr. Traube was, of course, the person on whom the whole responsibility of our proceedings devolved. Some of the cases were treated rather more perhaps according to his judgment, others rather more according to mine; and yet we acted throughout in such perfect harmony together, that no treatment was ever adopted by either in opposition to the opinion of the other. I brought from

Gräfenberg a knowledge of the most approved mechanical operations in the wet-sheet packing, baths, &c.; and I had diligently gleaned there, as well as from the published reports of hydropathic writers, all that could be learned respecting the immediate and remote action of the baths in common use, and their effects in acute disease, although for several reasons the information to be gained on these points is lamentably small. Only a very few cases of acute disease occur in hydropathic establishments, or, if they do occur, they have not, as far as I know, been reported. Those which we meet with in German books are almost all given by persons who have not sufficient information or experience to form a diagnosis even approaching to the truth; and their description of the symptoms, when not absolutely contradictory, is so vague that we can never feel certain that the disease, which they profess to have cured, may not have been something quite different. It really is not enough to say, as these writers are too much in the habit of doing, that a very considerable number of patients have been treated by them for acute

disease, and cured. The dispassionate inquirer demands much more than this; for with the meagre information afforded, it is quite impossible for him to form even a conjecture whether the patient owed his recovery to hydropathic treatment or not. Such reports no well-educated physician will ever consider of the least value. Cases ought to be drawn up at the bed-side, and a journal kept, detailing the progress from day to day, with such minuteness that medical men may be enabled to form some opinion as to the effect the remedies used have had in mitigating the symptoms, and in causing a fatal or favourable termination.

I dare hardly flatter myself that the report, which I am now about to make, of the cases treated by me at the Charité, will give satisfaction, for I am aware how much more easy it is to find fault with others, than to furnish a model worthy of imitation. I shall, probably, be thought to have fallen into an error the opposite of that which I have condemned in others, and to be too tediously minute; but I was desirous to put the whole of each case as much before my readers as possible, so that they might be able to judge for themselves.

But I had also another object in view in the scrupulous accuracy with which I observed these cases. I wished to determine with exactness the immediate effects of the various cold water applications in fever. One of the most obvious of those effects is the cooling of the body; it became necessary, therefore, to note its temperature with more care than is usually bestowed. In the course of these pages I shall make some remarks on the effects, immediate and remote, produced by different forms of baths, as well as the best mode of measuring the temperature of the human body; but shall consider both only at such length as is absolutely necessary to make the cases which I give intelligible.

The acute diseases which were treated by Dr. Traube and myself, hydropathically, at the Charité Hospital, comprise a long list,—typhus, pneumonia, pleurisy, acute bronchitis, peritonitis, pericarditis, delirium tremens, and Asiatic cholera; but in the cases of peritonitis and pericarditis, other treatment was used in conjunction. Pneumonia (I mean acute pneumonia, having a sthenic character), of which we

treated four cases by wet-sheet packing and shallow baths (applied with a vigour and firmness which I think would satisfy most rational hydropathists), is, according to my experience, far more fatal when treated hydropathically than it is when treated by other means; and I have formed a very decided opinion that in this disease the hydropathic resources should be employed only as auxiliary, or in exceptional cases. I am aware that this opinion is in contradiction to that expressed by almost all professed hydropathists, but their preference for the hydropathic to every other mode of practice in pneumonia, is certainly not founded on such evidence as would satisfy an unprejudiced inquirer conversant with the ordinary course of this disease, and with the effect of the usual methods of treatment in modifying that course. Before I ventured to test, by actual experience, the truth of the assertions of hydropathic writers with respect to the superiority of their method to the usual practice in acute disease, I made it my business to acquaint myself with all that had been written on the subject. With regard to pneumonia this was peculiarly necessary, for

not only among the public, but also in the profession, a strong prejudice exists against employing cold water externally in diseases of the chest; and such prejudices being often well founded, are entitled to the consideration of every cautious physician. Moreover, pneumonia is a disease which runs its course so rapidly, that there is no time for temporizing; and if cold water applications are to supersede all other antiphlogistic means, they must be used with great vigour and decision. Here is no room for hesitation or uncertainty, and yet a single false step may be irretrievable. With regard to the treatment to be adopted in pneumonia, I found hydropathic authors differing much from each other; and, unfortunately, the number of cases of pneumonia reported as treated by cold water is very small. Everything, therefore, like a general rule of treatment, however dogmatically put forward, not being based on a sufficient number of cases, is entitled to very little consideration. Nothing is left to an inquirer but to examine carefully the report of each particular case, and endeavour to ascertain what amount of credit the result said to have been obtained is entitled to.

I am far from meaning to insinuate that these authors have given an untruthful account of their proceedings, but when they speak of pneumonia, are we sure that the case is really one of pneumonia? Most of the cases reported are treated by non-professional men. Can we trust them to form an accurate diagnosis of this disease? I think not. When they give the symptoms which induced them to diagnose the case as one of pneumonia, they are generally these—an acute febrile disease, attended by shortness of breath, cough, and stitch in the side. Now the only inference that we are justified in drawing from these symptoms is, that the case was, in all probability, one of pleurisy. No direct evidence whatever is afforded by them of the existence of pneumonia; and, when the above symptoms only are given, it is quite uncertain whether the pleurisy was complicated with pneumonia or not. Had the reporters of these cases been aware of the great importance of attending to the matters expectorated, their accounts would have been of much more value; for the sputa occurring in pneumonia present characters so peculiar that even an uneducated

eye may detect and describe them with accuracy. The colour of these sputa is unlike that occurring in almost any other disease. It is, as is well-known, due to the intimate mixture of blood and mucus, and varies from lemon-yellow to tawny, rust-coloured, or deep blood-red. Where the sputa are said to have presented any of these shades of colour, and the other symptoms before given were also observed, viz., an acute febrile disease, attended by shortness of breath, cough, and stitch in the side, the case may be considered as having been really one of pneumonia; but when the sputa are merely stated to have been bloody, this is not accurate enough, for the blood may only have been in the form of bloody streaks, in which form it is of no importance, but would strike the non-professional observer almost as much as the peculiar colour of the true pneumonic sputa. In some cases it is even distinctly said that no expectoration occurred, and in these pneumonia was almost certainly not present. With the more certain means of forming a diagnosis given us by auscultation and percussion, of course a non-medical man cannot be supposed to be acquainted.

During a two months' residence at Gräfenberg, I made diligent inquiry of Priesnitz, and of every person there whom I thought likely to give me any correct information respecting the results of his treatment of pneumonia, and I learned from him, as well as from others, that the practice usually pursued at present at Gräfenberg in cases of pneumonia is to place the patient in a shallow bath, and keep him there, sometimes for hours. Under the influence of this energetic abstraction of heat, the disease is said rarely to last for more than twenty-four hours. I mean no disparagement to the great practical skill which Priesnitz undoubtedly possessed in the *treatment* of disease, by calling attention to the fact that his want of any scientific knowledge rendered him utterly incapable of forming a correct *diagnosis*. Indeed, he did not attach a very accurate meaning to the term inflammation of the lungs; but often used the words inflammation of the chest as synonymous with the former. Of the cases of acute disease called by both these names indifferently, the history of which, as treated at Gräfenberg, was related to me, some were certainly mere pleurisy;

others were also pleurisy, but in them, from the symptoms detailed, pneumonia might or might not have been present.

The only two hydropathic *physicians* who have spoken to me of cases of pneumonia treated by them hydropathically are Dr. Piutti, of Elgersburg, in Saxe Gotha, and Dr. Lauda, of Leipneritz, in Bohemia. Both of these gentlemen are well-educated and observing physicians, fully capable of forming a correct diagnosis.

Piutti told me that he had treated two cases of pneumonia hydropathically. In both, the patients recovered, but no quicker than might have been expected if the usual treatment had been adopted, while they were much tormented by the proceedings necessary; and he is so far adverse to this practice in pneumonia, that he would now only use it as an adjunct, or in exceptional cases.

This was also the opinion of Dr. Lauda, founded on a greater number of cases, and it coincides with my own, formed independently, and in contradiction to the statements of German writers. Should any English hydropathic physician have treated successfully any genuine

pneumonic cases, and would publish them, they would, I am sure, be read with interest by the profession ; and for my part, I shall be ready to confess that the cause of failure is not in the system, but in my defective application of it. Meanwhile, I must again express my conviction, that in the present state of medical science, we possess, for most cases of pneumonia, means of antiphlogistic treatment far better, safer, and more agreeable to the patient than cold water. From what I have seen, however, I would often use the wet bandage round the chest as an adjunct, and I would employ the whole force of the system in a few rare exceptions, where other antiphlogistic treatment was counter-indicated. Such cases are often met with in secondary pneumonia, occurring during the course of typhus, or of some other disease. One such case I have treated by shallow baths with marked success ; and these are precisely the cases in which medicine generally fails. I am inclined to think that pneumonia, occurring in drunkards, might be successfully treated by baths and cold water applications. It is well known how unsatisfactory the usual treatment is in such cases.

I shall proceed to mention very briefly the results of our hydropathic practice in the other forms of acute disease which we had an opportunity of treating at the Charité.

Of delirium tremens, we had several severe cases, all of which terminated favourably under the use of water applications alone, except one man who died; but he, in addition to delirium tremens, had very extensive inflammation of both lungs, so that in his case much was not to be expected. The mode of treatment which we adopted in delirium tremens, was, I think, unnecessarily complex, and I should much wish to simplify it, before recommending its trial by others.

Of cholera, I had only two cases; both were considered hopeless when I undertook them. One patient recovered—the other died. The one who died was, however, a man of seventy, who, in addition to cholera, suffered from chronic bronchitis, which was, in part at least, the cause of death. In both these cases I adhered strictly to the method prescribed by Priesnitz, and which I had reason to believe had been successful in the few instances in which he had applied it.

My opinion of hydropathic treatment for Asiatic cholera in the manner usually practised in England was not favourable. I had seen it so treated during our epidemic in 1848, with very little success. If no opportunity occurs to extend my observations in the hydropathic treatment of cholera, I shall, at some future time, publish these two cases as they are ; but I much wish to be more certain of the real efficacy of the treatment before recommending its trial by others.

Small-pox and scarlatina I had no opportunity of treating in Berlin ; but saw several cases treated by wet-sheet packing and cold baths in the General Hospital of Vienna. No case was fatal ; but the epidemic was a mild one, and scarcely any deaths occurred, where no treatment was adopted. The epidemic of typhus, on the other hand, which prevailed at Berlin at the time my observations were made at the hospital there, bore a very fatal character. Many of the cases began with moderate symptoms, and, up to the end of the second week, a person unacquainted with the nature of the epidemic, would probably have formed a favourable prognosis. During the third week, how-

ever, they very often assumed an adynamic character, with great stupor, in which state many of the patients died. The amount of mortality in the other clinical department during this time, where the fever was treated in the usual way, was twenty-five per cent.

The whole number of typhus patients treated by us during the period I was making these observations was sixteen. Of these sixteen cases, six were treated by calomel in large doses, with a view of cutting short the fever. Four so treated recovered; two died. In the two fatal cases, after the calomel had failed, hydropathic means were applied with vigour; but in one of them, were not begun until the end of the third week. The patient survived the fever, and died of debility. In the other fatal case, great debility had also been produced by the free administration of calomel at a stage of the fever when it was too late to do good.

The remaining ten patients were treated by cold water applications; and all recovered. No other treatment was combined with the hydropathic in these cases, except that small quantities of bark and wine were sometimes given during

convalescence. Two of these cases were mild ones, and were left in a great measure to nature, aided by a few wet-sheet packings and shallow baths.

The remaining eight were all severe cases, in which little was to be hoped from the unassisted powers of nature, and in some of them, not much more from the usual means resorted to in practice. One case was complicated with pneumonia, one with violent delirium. I have selected only four of these eight for publication. To have given all as fully as these four, must have involved a tedious repetition of mere details, and would I fear have wearied my readers. Nothing would have been easier than to make a *short* statement of the progress of each case ; but this I really considered as superfluous, for Dr. Currie, by the publication of his *numerous* cases fifty years ago, placed the general advantages of the hydropathic treatment in fever beyond a doubt. No one can read his "Medical Reports" without being satisfied that he had more success in fever by cold water affusion, than is obtainable in the present day by all the aids which medical science, confessedly so

greatly advanced since his time, can supply. My chief desire has been to remedy, however inadequately, a want which I felt in reading those otherwise valuable reports; and if I have pursued a closer investigation of the immediate effects of water treatment, and have given more definite indications for its use, the object I had in view will have been attained.

The first three cases of typhus which I publish afford examples of the effects of the forms of bath most used by me for this disease—*cold affusion, shallow bath,* and *prolonged warm bath.* I have given them with great particularity, thinking that a close and accurate description of the immediate effects of cold water applications in fever will tend more to recommend their liberal use, than numerous reports of cases given in a loose manner.

The other case of typhus is given to show the power of the cold superfusion in the warm bath in checking the delirium arising from cerebral irritation.

Of pure pleurisy, I treated only one case, which I publish.

Of acute bronchitis, I treated two cases, both

of which ended favourably. I only publish one of them. The other exhibited in a very striking manner the wonderful antiphlogistic power of the wet-sheet packing, where no other means could apparently have answered so well; but here it was employed as an adjunct to other treatment; and as the case is a very long one, and no part could be omitted without destroying its value, I refrain reluctantly from giving it.

Case VII., which is one of heart disease, where violent delirium occurred in consequence of congestion and irritability of brain, is given to show the value of the cold superfusion in the warm bath, where, in all probability, no other means would have availed to save the patient.

I am very far from presuming to present these cases as specimens of the best hydropathic treatment. Many more observations must be made before laws can be laid down, or anything like certainty arrived at. My own experience has unfortunately been so limited, that I should not have obtruded my opinions on the world, but for the reasons I have already mentioned, and, I must confess, that I very much wished to

draw the attention of the profession to a mode of treatment once so successful, and now so long neglected.

I claim credit for having spared neither time nor labour during the four months I spent at the Charité in the observation of our hydropathic cases, and as I took my notes at the bedside, their accuracy may be relied on.

I trust, also, that it will be quite evident that in copying them from my note-book for publication, no art has been used to make them look more striking than they really are, nor any colouring given to produce effect.

I am aware that had I made them much shorter, and given a greater number, they would have been a great deal more readable and interesting to the general public, but they would have lost much of their value for the intelligent physician, whose favourable judgment of the treatment which they develope and describe, I am much more desirous to obtain.

For myself, I am fully convinced of the superiority of this cooling method in fever, and am most anxious that it should have a fair trial in our large London hospitals, though I am aware that

the trouble attending it will be an objection to its introduction, but if by its means we are really able to alleviate human suffering and save life, this objection will not be persisted in.

The candour and liberality which distinguish our profession in London make me indulge the hope that a trial may be made, and that cold-water applications in fever will again meet with that general encouragement which, from my own experience, I really believe they deserve.

I would suggest that the cases treated in this way at first should be few in number, and observed with the greatest possible accuracy. In this way only can the fundamental rules which must guide us in our selection of the best mode of practice be firmly established.

54, *Upper Charlotte-street, Fitzroy-square,*
February 21*st*, 1852.

CHAPTER I.

TREATMENT OF TYPHUS.

It is not very easy to give any adequate reason why a method of treating fever, known to have been so successfully pursued by Dr. Currie at the close of the last century, and by so eminent a physician as Dr. Horn at the beginning of this, should have been so universally abandoned.

The popular objection, that it occasions a good deal of trouble, and requires much watching and attendance, ought to have no weight whatever in our large and well-endowed hospitals. Nor can the strong prejudice which patients often entertain against water affusions be a sufficient objection to its adoption, for if it were once generally known that, to submit to them would give the best chance of saving life, they would be as eager to get into the bath, as they now are to avoid it.

Whatever be the reasons, however, which induced the immediate successors of Dr. Currie to abandon the liberal use of cold-water affusions in fever, there can be little doubt that one of the greatest obstacles to the introduction of hydropathic practice into our great hospitals at the present day, is the gross exaggeration which many non-professional men have fallen into while recommending the adoption of their favourite system. This remark applies principally to the German writers, in whose works we are continually reading of the cure of pneumonia, typhus, and other febrile diseases, in a single day, by the prolonged use of the cold bath. Nor have the fables circulated by many English authors who have visited Gräfenberg, and other hydropathic establishments on the Continent, been without their effect in creating a feeling of repugnance in the medical reader to mix himself up with so much absurdity. No one knows better than the well-educated physician, how much, pure air, simple diet, regular exercise, cheerful society, absence from the cares and annoyances which disturb the patient at home, can effect in restoring health, and if book-

makers would only be content to dwell on these, there would be no harm done. But when they descend to particulars, and talk of paralysis, apoplexy, gout, rheumatism, and other diseases, as yielding, in a marvellously short space of time to certain modes of treatment, they then get quite beyond their depth, meddle with matters of which they can know nothing, and do great mischief by repelling inquiry among persons who are best qualified by previous study to prosecute it advantageously.

I am very far from wishing to insinuate that the different water applications, when skilfully directed, are not *of themselves* most efficacious in removing many diseases, both chronic and acute.

So fully am I convinced of their power, that at the present moment I am subjecting myself to active hydropathic treatment for the alleviation of a complaint that I have but little hope of removing either by medicine or regimen. To many invalids, also, I would recommend a residence at some well-regulated hydropathic establishment in preference to any other mode of cure.

My experience of the cold-water treatment in chronic diseases, nervous affections, and those slight derangements of health to which all are occasionally subject, has been gained by a two months' residence at Gräfenberg, six weeks at Dr. Piutti's establishment at Elgersburg, and a short visit to most of the other water establishments on the Continent.

My conviction of its efficacy in acute disease is based on the statements of Currie, Horn, and other competent observers, but principally on my own experience, gained after four months most laborious work in the Charité Hospital at Berlin.

I may also mention here, that during attendance at the General Hospital, at Vienna, from December to March, 1851, I had an opportunity of seeing the efficacy of hydropathic treatment in several cases of small-pox, erysipelas, and scarlatina, as well as in some chronic skin diseases, among which I may particularly mention Psoriasis and Eczema, in the clinical wards of Professor Hebra.

I believe this method of treatment to be the best at present known in typhus fever, in the

exanthemata, small-pox, measles, and scarlatina, and in some other acute diseases; and I have little doubt it would be extensively adopted by medical men, were they but familiar with the modes of application, the symptoms calling for each modification of it, and the immediate effects of the baths.

I hope in these pages to say something new on these several points; I shall at all events satisfy my conscience by recording my conviction, that the subject is one well worthy of further investigation, and that, by judiciously varying the modes of application, we shall be able to fulfil many different and most important indications, with far greater certainty and safety than by any of the means usually employed in the practice of medicine.

I proceed now to consider what these indications are, and, for this purpose, shall inquire very briefly into the different modes of treatment recommended in typhus. I shall state what may be expected from them, what from the hydropathic practice. I take typhus as a convenient example, for its highly dangerous character under all the usual modes of treatment

fully justifies us in testing the merits of any alleged improvements in practice that come recommended to us by respectable authority, while its frequent occurrence in our large hospitals give constant opportunity for observation.

Now, it was known before the time of Currie (and during the present century there assuredly has been no lack of evidence) that typhus fever is peculiarly adapted to hydropathic treatment. The reason is, that in most cases of typhus symptoms occur which, if allowed to continue, become dangerous to life, and which, in general, cannot be assailed by any of the ordinary means of practice without risk of inducing a train of symptoms still more formidable than those it is wished to remove. Hence we find that many of the best authorities, at home and abroad, recommend leaving the course of the fever to Nature. They make no attempt to remove the most distressing symptoms, not being certain, that should they succeed, they may not have damaged materially their patient's chance of recovery by inducing other symptoms still more dangerous.

As no one in the present day will be bold enough to maintain that we have any specific

against typhus, when once it is fully established, I shall leave out of consideration any method of destroying its morbid poison by medicine administered as an antidote.*

Many methods have been successively vaunted as capable of arresting typhus in the very onset. I consider only two of these supported by sufficiently good authority to make it worth our while to discuss them here.

The first of these methods is the cold affusion, recommended by Dr. Currie. This, however, as he himself says, can only cut short the fever when applied within the first two or three days after the first symptons of indisposition appear. Under these circumstances he really appears to have cut short many cases of fever. But he was himself well aware that it is impossible to assert with

* Since writing the above, I have met with a paper by Dr. Dundas, of Liverpool, in *The London Medical Journal*, in which he calls the attention of the profession to a method of treating typhus by ten-grain doses of quinine, repeated every two hours. He states that quinine thus given is really a specific against typhus. Dr. Goolden, of St. Thomas's Hospital, who has pursued this practice for the last two years, expresses himself, in a letter I have received from him on this subject, very highly satisfied with its results. It is much to be wished that Dr. Goolden would publish the cases so treated by him, and that further trial should be made in other hospitals.

absolute certainty that a single case was *really* arrested by this means, because during the first two or three days, typhus presents no symptoms that will enable us to form a certain diagnosis. If, therefore, a patient fall ill with languor, headache, and the other symptoms which usually usher in the attack of typhus, and if we see the case before the end of the third day from the beginning of these symptoms, and, assuming it to be commencing typhus, treat it by cold affusions, it by no means follows, because the symptoms disappear, and the patient recovers rapidly, that we have really succeeded in arresting a case of typhus, because it is very possible that we were mistaken in our diagnosis, and that the case was not really commencing typhus, but only some gastric derangement, or other slight febrile disturbance. And supposing that in the cold affusion, applied before the end of the third day, we do possess a means of cutting short the progress of typhus, this power is not perhaps of so much practical importance as it may at first seem. For let us suppose that a case actually comes under our observation at this early period, and that we have suspicions that the case may

be one of commencing typhus, we shall now, believing in the efficacy of the cold affusion, have to make up our minds whether we will use it or not.

If, on the one hand, we use it, as it is very possible we have made a mistake in the diagnosis, and the disease may be some other in an incipient state, we *may* have the mortification of seeing that, instead of arresting typhus, we have aggravated the real disease. If, on the other hand, we lean to the side of caution, and have a not unnatural and very excusable repugnance to dealing heavy blows in the dark, we let slip the favourable opportunity, and it will never return; for as soon as the symptoms are sufficiently decided to allow of a certain diagnosis being made, it is too late to make any attempt to arrest the fever by cold affusion.

The only case in which I should feel myself justified in using the affusion for this purpose, is where the patient has been previously healthy, and is known to have been recently exposed to contagion. These circumstances might so increase the probabilities of the complaint being typhus, that it would be right to act on this assumption.

The instances, then, are rare in which the cold affusion can be used as a means of cutting short typhus, for the diagnosis in the earliest stage, where alone it can succeed, is seldom sufficiently sure to make it right to act on it,—moreover, patients seldom apply for admission within two or three days after the first attack.

The second method I shall mention is, like the "cold affusion," only applicable during an early stage of the fever; but as it may be used with a good chance of success at any time within the first week, it allows of a certain diagnosis being made before its employment. I can bear favourable testimony, from personal experience, to its efficacy in some cases. I found this method occasionally practised by Professor Schönlein. Dr. Traube has improved it, and brought it to fixed rules. It consists in giving large doses of calomel frequently repeated. The usual dose was five grains every three hours, repeated according to symptoms, from five to eight times. The effect sought, was to produce a copious flow of bile. The kind of evacuations that indicate the medicine is acting favourably, are copious, dark-green, and of the consistence

of thick gruel. If such motions were produced in a case otherwise suited to the treatment, the further progress of the fever was generally arrested. If, however, the calomel acted as an irritant to the intestines, producing thin, watery stools, it then did no good.

The cases not suited to this plan of treatment were those in which diarrhœa existed, and those which had lasted more than a week—though some cases, even in the second week, were materially benefitted by such an administration of calomel.

I am not aware of any other treatment, recommended by sufficient authority, that can be safely resorted to for the purpose of arresting typhus, and from cold water affusions, unfortunately, we cannot expect much after the third day; while large doses of calomel *may* undoubtedly be of use up to the eighth or ninth day, but they are counter-indicated by diarrhœa, and probably will only be found to answer in particular epidemics.

I proceed now to consider what is to be done with the numerous cases which do not come under treatment until quite too late to allow

us to entertain any reasonable hope of extinguishing the fever, and which make up the great bulk of those occurring in practice. What, alas! can be done, except to relieve as much as possible those symptoms whose continuance produces most danger, and while attempting this, to abstain from all treatment likely to aggravate any of the other symptoms. It unfortunately happens that we have hitherto within our reach no certain means of relieving one set of symptoms without danger of aggravating another.

Among those physicians who adhere to any particular *system* in the general treatment of fever, there are two great parties diametrically opposed to each other. Each is persuaded of the advantages of his own system, and each decries the mode of practice resorted to by the other. One party sees in the high fever the most dangerous symptom. In order to diminish that fever, the patient is bled or leeched, by which means, though the fever is lessened, such a state of debility is produced that the patient either dies of exhaustion, or has a long and tedious convalescence, and probably will not perfectly recover his former health for

months, or even years. Another party, in order to avoid the exhaustion and debility always present in typhus, particularly in the latter stages, gives ammonia, wine, brandy, &c. The stimulus keeps up the patient's strength for a time, but there is always danger that by so much increasing the heat and fever, the patient may die of the effects of over-stimulation, congestion of the brain, or some internal inflammation.

Those who consider fever as essentially a disease of some one organ, are still less fortunate in their practice. Misled by a continued stupor, leeches are applied to the head against inflammation of the brain which may not exist; or in cases where diarrhœa or great tenderness in the cæcal region is present, they are applied to the abdomen against a supposed inflammation of the intestines. By neither of these proceedings is anything commonly gained. The most that can be said is, that a mere temporary benefit has been purchased at the cost of an increase of debility.

I made this very important subject so much the object of inquiry during my attendance at the German hospitals, that I can take upon

myself to affirm, without fear of contradiction, that all the great German physicians are agreed on this general rule, "As we can do but little good in most cases of typhus, we should at least abstain from doing harm, and either give no medicine at all, or such negative medicines as only act by the water they contain;" and this opinion is supported by very respectable authorities in this country. I do not, of course, mean to say that the physician is not bound to observe his patient most narrowly, for in many cases a moment arrives for the most decided and energetic treatment. I speak of that moment when the powers of life begin to fail, while the morbid process is also on the decline, for on his power of recognising and seizing the moment, depends the success or failure of the physician. If we omit to stimulate now, the patient dies of debility; had we stimulated before, we might have added fuel to the fire already consuming the patient.

A similar moment often arrives when irritability of the brain gains the ascendency over torpor, and then a well-timed dose of opium may do wonders; but both stimulants and

opiates, even with the greatest caution and in the hands of the most experienced physician, are dangerous remedies, and though I know that they have saved the lives of many, yet I fear I must add, that they have often done irreparable mischief.

With respect to bleeding, as an antiphlogistic means in typhus, all the best living authorities in Germany have a decided objection to it, and I think it will also be granted that the weight of authority in this country is decidedly against it. I shall add that the few cases in which I have seen it tried, have not prepossessed me in its favour. The immediate effect is often, though by no means always, to alleviate the symptoms against which it is directed, but the tendency to exhaustion and debility, ever present in typhus, is necessarily increased, so that the cases must be few indeed where its employment can be justifiable. It is well known that the weakness arising from loss of blood in typhus lasts longer than in acute inflammatory diseases. The powers of digestion and assimilation are, in typhus, so much impaired, that it is very long before new blood can be made to replace that

which has been abstracted. Moreover, when it is considered that this fever is of long duration, and that during its whole continuance the waste of the tissues is greater than can be supplied by the enfeebled powers of nutrition, it need not be matter of surprise, that any additional drain on the system should be productive of great and often of fatal exhaustion.

Having briefly glanced at the different modes of treatment usually adopted in fever, I pass to the consideration of that form of hydropathic treatment which I have found useful in this disease.

If we except those very rare cases, in which typhus may be arrested at its very onset, the means for accomplishing which have already been considered, the hydropathic treatment, to be successful, must be regulated by the symptoms present.

This is, indeed, the case with every other system; it cannot, however, be too often repeated, that the only successful way of treating fever or acute disease of any kind, is to watch assiduously by the bed-side, to be ready to combat unfavourable symptoms as they arise.

The symptoms that our attention ought principally to be directed to in typhus, may be divided into two groups.

I. Those dependent on the essential nature of typhus fever, which occur therefore with more or less intensity in every case.

II. Those dependent on complications, not essential to the fever, and which complications are often not present.

The symptoms dependent on the essential nature of typhus are—

Changes in the circulating system and in the production of heat. The pulse is generally accelerated in fever, and the number of respirations in the minute generally increased; but both of these symptoms have been so often dwelt upon by others, that I pass them over, and shall content myself with a few remarks on the temperature in typhus, and I do so the more readily, since, according to my experience, the rise or fall of the temperature affords a more certain criterion of the increase or decrease of the fever, than does an increase or decrease in the frequency of the pulse. I have also found that any cooling of the body, sufficient to pro-

duce a marked decrease in its temperature, also produces a diminution in the number of pulsations and acts of respiration in the minute.

In all cases of fever in which I have measured the temperature, it has been considerably higher than 37·6 to 37·8, which is the normal standard of health.

It must be remembered, that a feeling of chilliness on the part of the patient by no means proves that the temperature is lowered, nor can this be inferred even if the surface of the body be cold to the touch. The feeling of chilliness or shivering in fever is a mere nervous phenomenon, and is often observed when the temperature of the body is far above that of health. In the cold stage of intermittents a great feeling of chilliness is present, and even violent shivering, and yet the temperature of the body, as measured by the thermometer, is found to be greatly increased.

Another set of symptoms, always present in typhus, is due to the affection of the nervous system so constantly found in this disease. There are, indeed, very few cases of typhus, in which the nervous system escapes — all the

great nervous centres are early affected by the poison.

The affection of the brain shows itself in two different forms. In one case there is stupor, more or less profound; the patient is apathetic, and his perceptions and sensations are also impaired. Sight is dull; hearing is frequently lost; the senses of smell and taste often seem to be much blunted. If delirium occurs, it is of a low form. The patient lies on his back, muttering incoherently to himself, and is quite indifferent to surrounding objects.

The opposite condition to this also occurs sometimes, marked by a greatly increased irritability. The patient is restless, irritable, and morbidly sensitive to all external impressions. He answers hurriedly, and almost before the question has been put. Sight, hearing, smell, are morbidly acute, and if delirium be present, it has many of the characters of delirium tremens.

It is of great importance in the treatment of any given case, to determine which of these two states prevail, as the form of hydropathic treatment which would relieve one would aggravate

the other. The spinal cord is always much affected by the poison of typhus. The diminution in the state of polarity in this part of the nervous system is indicated by the relaxed state of the voluntary and involuntary muscles, as well as by the difficulty of exerting reflex actions, and their feebleness when produced.

That the sympathetic system is also affected is seen by the loss of appetite, impaired nutrition, tendency to ulceration, &c.

The second great group of symptoms occurring in typhus are those dependent on complications, not always present, diarrhœa, melena, vomiting, epistaxis, bronchitis, pneumonia, pleurisy, inflammation of the brain or its membranes, erysipelas, bed-sores, &c.

This brief glance at the symptoms is merely intended to assist in explaining the principles which are to guide us in the hydropathic treatment of typhus.

The increased heat of the patient may be abated by any of the forms of application of cold water, and the choice of the particular form to be adopted in any case, must be determined by other symptoms, and chiefly by the state of

the nervous system. If there be tendency to stupor, some form of cold water application must be used, that is capable of rousing and stimulating the nervous system, while it diminishes the heat of the body. This is attained by using water of a low temperature, and making the application as sudden as possible, as is the case in the cold affusion.

If, on the other hand, the patient be irritable, such an application will much aggravate all the symptoms, and in this case we must have recourse to some form of bath that will cool the body to the requisite amount, but without stimulating: thus the full sedative effect of the cooling will be produced. Wet-sheet packing has this effect, and the warm bath, 93° to 95°, prolonged for three-quarters of an hour to an hour, is still more purely sedative.

For further details on the use of the baths, I must refer the reader to another part of these pages, where their effects will be more fully considered. I hope sufficient has here been said to give an idea of the general plan of treatment to be kept in view.

With regard to the treatment of *complica-*

tions, these do not in general require much especial attention. If the treatment is directed against the increased heat, modifying the form of bath according to the state of the nervous system, it will be found that diarrhœa, catarrh, and most other complications are not rendered worse, but rather that they diminish along with the diminution of the fever. I have even successfully treated a bad case of typhus complicated with pneumonia by shallow baths repeated daily.

Dr. Horn, whose very extensive opportunities of observation give much importance to his statements, says, that bed-sores occurred much less frequently in his cases, after he had adopted cold baths as the principal mode of treatment, than they did before.

Both Dr. Horn and Dr. Currie observed that the debility following the fever was in general not nearly so great when cold baths had been employed, as in cases where other forms of treatment had been adopted. Also, that when fever is treated by cold affusion, the necessity for internal stimulus is much diminished. Dr. Horn observed, that the fever spread much less

by contagion after the practice of water treatment had been followed, than it did before; and this might have been expected.

The good effects of cold applications to the head in relieving the stupor or delirium caused by a congested state of brain, are too well known and acknowledged, to make it necessary for me to mention them.

GENERAL AND DIETETIC TREATMENT.

It is of great importance in the treatment of fever, that the patient should be surrounded by cool fresh air. Since the time of Sydenham, all are, fortunately, agreed on this point. Dr. Currie mentions an interesting case, in which the cooling of the patient by admitting the fresh air into his apartment, produced a marked abatement of many of the distressing symptoms; and Dr. Horn never allowed the windows of the fever wards to be closed day or night, though the thermometer often stood below the freezing point, and to this thorough ventilation he attributed much of his success.

As a drink, nothing seems better than cold



water. The patient may safely be allowed to satisfy his thirst with it. Most patients drink it with eagerness, and no doubt it lessens fever by assisting in the abstraction of heat.

With regard to diet, the patient should, as long as the fever lasts, be restricted to farinaceous food—arrow-root, gruel, sago, &c., milk, and thin animal broths. This diet has not only the best authorities in its favour, but is most in conformity with physiological principles.

During convalescence, the return to a more generous diet should be very gradual, and every trace of feverish excitement be allowed to subside before the clamorous demands for meat be satisfied. Inattention to this rule causes very many relapses. A similar caution is necessary with regard to the resumption of exercise, and the fever ought to have completely ceased before the patient is allowed to leave his bed.

These rules for the general management of fever patients, I consider equally applicable under the hydropathic method as under the usual modes of treatment.

Before concluding this part of my subject,

I think it right to say, that since I have become acquainted with the great advantages of the water applications in the treatment of fever, the only instances in which I have felt inclined to use other means were those rare cases in which large doses of calomel *may* be given, as before mentioned, with a view of arresting typhus; for I have had the most convincing proof in my own practice, that by cooling the surface of the body we have it in our power to produce all the immediate good effects of bleeding and the antiphlogistic treatment, without any of the debility and exhaustion which make bleeding, &c., so injurious, while by varying the temperature of the water, and the mode of application, we can at the same time apply any amount of stimulus that the case may require. Indeed, the hydropathic system is the only one that combines in itself the advantages of the cooling antiphlogistic treatment, and the stimulating, but without the disadvantages of either. By varying the mode of application, we can diminish stupor or irritability, whichever be present, put a stop to delirium, and often procure refreshing sleep. Sometimes critical evacuations immediately fol-

low its use. I am of opinion, also, that it affords the best means of treating the various inflammatory or other complications which may occur during the course of fever.

CHAPTER II.

ON THE BATHS.

I PROCEED to describe some of the more important baths which I used in the treatment of acute disease, and shall add a few observations on the circumstances that call for, or forbid their use, as well as on their most important immediate and remote effects.

But before speaking of the particular forms of bath, I shall mention the general rules that ought to guide us in all cold water proceedings. These rules were laid down by Dr. Currie, and their correctness is universally admitted.

The most general indication for external cooling measures, is a permanent increase of the temperature of the body. According to my experience, the temperature of the adult human body in health varies from 37·6 to 37·8 C. If the temperature of the patient is permanently

as high as 38·5, this would indicate fever, and unless special contra-indications exist, some form of cold bath might be applied with advantage.

Cold baths must never be used in acute cases, unless the temperature of the body, as measured by the thermometer, is above the standard of health.

If the temperature is abnormally high, but any feeling of chilliness exist, the cold affusion is contra-indicated, and though some form of bath may sometimes be used in such cases, great caution is requisite in its employment.

If the powers of the system are so far reduced that it is doubtful whether they will react sufficiently, no form of bath is to be used.

When the patient's body is bathed in a general perspiration, no form of bath must be used.

To this last rule I believe there may be exceptions, and partial perspiration is, as I have repeatedly convinced myself, no contra-indication to the use of the bath, provided the rest of the body be hot and dry, and there are no other reasons against the bath.

These general rules apply to all cooling applications.

I now pass on to the consideration of the particular forms of bath.

I. *Affusion*, as practised by Dr. Currie.

The patient is placed naked in an empty bath, and while so seated, several buckets of cold water are dashed from a height of one to three feet, or even more, on his head and chest. The temperature of the water employed is generally about 40° F.; but the exact temperature must be determined by the symptoms of each individual case. The colder the water is, and the greater the height from which it is poured, the more stimulating is its effect. In great stupor, therefore, the water should be very cold, and the height from which it is poured should be great.

The cold affusion so applied, is indicated where, along with considerable elevation of temperature, there is great stupor, and little irritability of the nervous system.

Its immediate effect is to diminish the temperature of the patient, frequently by 2° F. or more.

The frequency of the pulse and respiration is also much diminished, and the greatest dimi-

nution does not follow the affusion immediately, but takes place at a period varying generally from half to three-quarters of an hour after it.

The duration of this abatement of all the symptoms of fever varies with the case, but two or three hours may be assumed as the average in severe cases.

During the affusion, the tongue, if before dry, almost invariably becomes moist and soft.

The stupor diminishes, and sometimes disappears altogether during the affusion, and seldom attains its former intensity for the next twenty-four hours.

Sleep usually follows as a consequence of diminished fever, and a critical perspiration sometimes breaks out after the patient has been replaced in bed.

As an illustration of the immediate effect of the cold affusion on the temperature, pulse, and respiration, I shall repeat here the measurements which will be found in the case of Hauston. I have tried them frequently in other cases, and always with similar results, so that I

feel quite certain of the accuracy of the conclusions founded on them.

1850, Sept. 21, 4 P.M. P. 90; R. 36 in the minute. Temperature in axilla, 40·2 C.

4^h 41^m.—He was now placed naked in an empty bath, and four buckets of water, 48° Fah., were suddenly dashed over him. He was then dried, and replaced in bed at 4^h 43^m P.M.

4h. 48′ thermometer again introduced into axilla.

5h. 12′ ... 39·2 C.	4h. 51′ P. 95, R. 33
5h. 35′ ... 39·2 C.	4h. 55′ P. 92, R. 27
	5 P.M. P. 88, R. 24
	5h. 13′ P. 86, R. 29
	5h. 38′ P. 76, R. 30

Currie's affusion, however, is contra-indicated in all cases in which there is much irritability of the nervous system, and whenever I have applied it in such cases, I have repented its use, from the increased irritability, restlessness, and loss of sleep caused by it.

The affusion acts, therefore, as a stimulant to the nervous system, but differs from all internal stimulants in common use, by acting at the same time as a cooling agent, whereas they increase the heat and fever. It really is what the ancients would have called a true "Excitans

frigidum," and is therefore applicable in all conditions of fever in which a stimulating method is indicated, while, at the same time, it is desired to diminish the intensity of the fever.

II. The *Shallow Bath* is a bath about six feet long, with a depth of water varying from five to twelve inches. The temperature of the water varies from 60° to 80° Fahrenheit. In this the patient is placed in a sitting position, with the lower extremities consequently covered by the water. They are constantly rubbed by an assistant, while water from the bath is poured gently over the head and trunk, from a pitcher. This operation is occasionally interrupted, and the trunk is well rubbed by an assistant, who wets his hands in the water of the bath. The patient is kept in the water a variable time, until he is sufficiently cooled, which must be decided by the physician, according to the appearances during the bath.

The immediate effect on the three great symptoms of fever—the temperature, frequency of pulse, and of respiration, is the same as that observed after Currie's affusion, but this bath is

not so stimulating, and the amount of stimulation can always be regulated, as the colder the water the greater the stimulus, and *vice versâ*. By raising the temperature of the water, however, though we diminish the stimulating effects of the bath, we diminish, at the same time, its cooling power; if, therefore, we require to use this bath in a case where but little stimulation is desired, but a great amount of cooling is necessary, the temperature must be comparatively high, and the duration long.

This bath is indicated in cases in which stupor is combined with a degree of nervous irritability which would counter-indicate the cold affusion. It will be found that women seldom bear the cold affusion, and that with them, therefore, this bath must generally be substituted for it.

III. Wet-sheet packing was not employed in any of the cases which I now publish. I have frequently used it in other acute diseases, and occasionally in the course of a case of typhus. It is still less stimulating than the shallow bath, but it is also a less cooling agent, and must, therefore, be frequently repeated if intended to produce the same effect.

IV. The warm bath, 93° to 95° Fahrenheit, in which the patient is placed in a sitting posture, up to the chin in water, and there supported by proper contrivances.

I am not sure whether some of my readers may not be startled at my calling a bath of 93° to 95° a cooling agent. A very little consideration, however, will show that it must be so considered. Very few fever patients, for whom this form of bath is desirable, have a temperature below 104° to 106° Fahrenheit. Now, as the bath has a temperature of 93° to 95°, and water is a good conductor of heat, it follows that the immersed patient must part with his heat rapidly to the water, and his temperature must, therefore, fall, unless indeed he has the power of reproducing the heat as fast as he loses it. Direct thermometric measurement is the only means of ascertaining with certainty, whether water of temperature 95° is sufficiently cool to abstract heat more rapidly than it is formed in the body, and thus to lower the temperature of the patient. In my notes of a case of typhus in which this form of bath was used, the following measurements were made, November 23, 1850.

The patient was a woman.

The temperature was measured under the tongue. Before the bath—

5h. 57′ P.M. Thermom. introduced—P. 106, R. 42
5h. 58′ ... 38·7
5h. 59′ ... 39·6
6h. ... 40·
6h. 1′ ... 40·3
6h. 2′ ... 40·45
6h. 3′ ... 40·5
6h. 4′ ... 40·55
6h. 5′ ... 40·6
6h. 6′ ... 40·65
6h. 7′ ... 40·65
6h. 8′ ... 40·65
When thermometer was removed.

She was now placed up to the chin in water of 95° Fahrenheit, and, after having remained in this for forty-two minutes, the temperature was again measured under the tongue, while she continued immersed up to the chin in water. The water of the bath at this time retained the temperature of 95° Fahrenheit.

7h. 7′ thermometer introduced.
7h. 9′ ... 38·3
7h. 10′ ... 39·2
7h. 11′ ... 39·4
7h. 12′ ... 39·6
7h. 13′ ... 39·65
7h. 20′ ... 39·65

Her temperature had, therefore, fallen 1° centigrade, and this warm bath of 95° had, in the course of fifty-three minutes, cooled her to that extent.

The same striking result has been invariably attained by me, wherever I have made similar measurements; and I consider, therefore, that the cooling effect of a bath of 95° is clearly made out—*à fortiori* when the water is below that temperature. I had, indeed, formed this opinion before I made any thermometric measurement, from the change of symptoms produced by the bath. The patient during the bath feels himself very comfortable. The distressing sense of feverish heat diminishes. After the bath, at an interval which I have known to vary from five minutes to half an hour, *shivering* generally occurs, and lasts sometimes a considerable time; when this has ceased, the patient generally falls asleep, and all the feverish symptoms are found diminished.

I cannot, therefore, entertain the slightest doubt that the antiphlogistic powers which the warm bath has long been known to possess in fever are really due to the cooling of the body,

so that the warm bath of 93° to 95° belongs, in fact, to the same class of remedies as the various applications of cold water. It is the most directly sedative of all the forms of bath with which I am acquainted, and is, therefore, indicated in those cases in which a cooling of the body is desirable, and in which, at the same time, the patient's nervous system is too irritable to bear even the excitement produced by the wet-sheet packing.

V. *The Cold Superfusion in the Warm Bath.*—The patient is placed in a bath, and immersed up to the neck in water of 93° to 96° Fahrenheit. Here he is held down, and a stream of cold water directed slowly over his head. The quantity of water thus employed must be determined by the nature of the case. About ten buckets is the smallest number, and forty the largest, that I have myself administered at any one time. The temperature of the water in which the patient is sitting, must be kept up by occasionally letting off the cold water from the bath, and adding warm water to it.

This form of bath is very useful in delirium tremens, when so much fever is present as to

forbid the use of opium. In such cases I have never seen it fail to produce sound sleep, from which the patient awoke refreshed and rational.

I ought, however, to mention that we did not very often employ it, on account of the trouble it occasions, and the great quantity of both cold and warm water required. Whenever there seemed a reasonable probability that sleep could be procured by opium or morphia, we were easily persuaded to have recourse to them. It should, however, be remembered that the cases of delirium tremens in which opium can do no good, are precisely those attended by the greatest danger.

After the patient has been placed in the bath, he usually remains quiet until five or six buckets of water have been poured over his head. The expression of his countenance will then indicate very clearly that the cold to the head causes him severe pain, and he will make a struggle to get out of the bath. He must, however, be kept in, and the superfusion continue until he becomes quiet and more rational. This improvement of condition is generally noticed

immediately after the bath, but it often requires five or six repetitions before sound sleep is produced. When this result has been obtained, the patient may be considered out of danger, for he awakes refreshed, rational, and generally calls out for food. This form of bath is equally useful in the delirium, resembling delirium tremens, which comes on sometimes in the course of febrile diseases, from the brain becoming irritable. It may be asked in what respect this most troublesome method of cooling is superior to the usual applications of ice to the head. From the effect I have seen produced from a stream of water poured over the head in delirium tremens, I cannot doubt that it is a much more energetic means of cooling than ice. Moreover, the body is immersed in a warm bath, and this, we have already seen, is alone sufficient to lower its temperature. But whatever be the rationale of the mode of action of the superfusion, its wonderful effects will not be denied by those who have witnessed its application in desperate cases; and though I confess the trouble and inconvenience caused by its use, cases still continually occur in which I would willingly encounter

both, for the benefit which the patient could derive in no other possible way.

The foregoing remarks respecting the different forms of bath are sufficient to show that the hydropathic method in fever is not quite so simple as is generally imagined; and that, supposing the objection to its re-introduction to our hospitals to be overcome, success or failure will, in great measure, depend on an accurate knowledge of the effects of the different baths, and on our power of adapting the treatment to the exigencies of each individual case. I cannot too often repeat, that it is by no means matter of indifference what particular method of cooling we adopt in fever—I have often tried the cold affusion, when doubtful whether the patient could bear it, but have been obliged to desist, and then the most marked benefit has arisen, when the wet-sheet packing, or warm bath was substituted for it.

I shall take this opportunity of considering an objection to hydropathic treatment in fever, which at first sight seems to have weight.

How comes it that a practice, of which the success was proved by overwhelming evidence,

should have fallen into almost complete neglect?

This question occurred to me when I first read Currie's "Medical Reports;" and the plausible answer, that there might have been something in the type of the epidemic at Liverpool in his time, for which this remedy was peculiarly suited, did not satisfy me; for though the power of the cold affusion in *cutting short* typhus was doubted by most of his immediate successors, yet its good effects in mitigating the intensity, shortening the course, and very much diminishing the mortality in this fatal disease were very generally admitted by medical men in various localities. Such was the experience of the physician then at the head of the London fever hospital. The practice was also attended with great success in some of our large provincial towns. It was adopted in the navy. It found many zealous advocates in Germany, among whom I have already mentioned Dr. Horn, whose great ability, as well as opportunity for observation during a most malignant form of this disease at Berlin, no one will question. When, however, I began myself to treat cases of

fever by cold affusion, and to observe their progress with the most watchful and jealous attention, I soon perceived that its indiscriminate use was a great mistake, and that its application in certain cases never failed to aggravate the symptoms. Dr. Currie had also noticed that when irritability of the nervous system was the type of the epidemic, the affusion did not answer; but he nowhere lays down the law, that it is counter-indicated in all cases in which stimulus is counter-indicated; and from an examination of his "Medical Reports," it would almost seem that he had never formed a very distinct idea of the twofold mode of operation of his cold affusion as a *stimulant* and as a *cooling* agent. The cases in which he reports it to have been unsuccessful, were those in which great nervous irritability was present, and, on the other hand, those in which the advantages resulting from its use were most evident, were marked by great oppression of the nervous power, in which the patient required stimulus to rouse his vital energies to action. Now, if we bear in mind that the cold affusion is a *stimulant* as well as a *cooling* agent, we shall

be better able to understand the reasons that induced the generation of physicians succeeding Dr. Currie gradually to abandon it for cold or tepid sponging. On looking through their writings, I find no allusion to the importance of the cold affusion as a means of rousing the patient from stupor. Their only indication for its employment seems to have been increased heat, and they, therefore, probably applied it in many cases in which irritability of the nervous system rendered the practice injurious. The principal objection which they make to its use is, that it "*alarms and fatigues the patient;*" and this objection is well founded, if the affusion be used in all cases of fever indiscriminately, whenever the heat of the body is much increased. I have little doubt that, having been so employed, its effects were noticed in many cases to be pernicious, and the practice was therefore abandoned for that of cold or tepid sponging. The cases in which alone the affusion should be employed are those in which, besides increased heat, there is also considerable stupor, and patients in this state are far too lethargic, and too little alive to what is passing around them,

to feel any alarm at the preparations. While the stream of cold water is descending on them, they no doubt do feel alarm the first time that the affusion is administered; but having once experienced the pleasurable sensations produced by it, they will generally, if sufficiently rational to express any wish for or against, of their own accord request its repetition. This was also remarked by Dr. Currie; and Dr. Horn observes that his patients very willingly submitted to it, after they had once felt the improvement of their condition, and the pleasurable sensations immediately following its use.

From this it would appear that the objection to the use of the affusion, in cases otherwise suited for it, founded on the alarm with which the patient regards it, is rather theoretical than practical.

It is also objected that it fatigues the patient. To this I reply, that I have never yet seen a case in which the patient did not feel refreshed and invigorated by it. This remark, also, applies *only* to those cases where the affusion is properly used.

Supposing it to be employed on all occasions

whenever the heat is abnormally great, I can readily believe that both the alarm and fatigue would often be so great, as to compel the practitioner to desist, and try some other method.

I am convinced, then, that the disuse into which the cold affusion has fallen, has arisen from a want of acquaintance with the true indications for its employment.

With regard to the practice of sponging, I believe any cooling of the surface of the body to be beneficial. But sponging can never be substituted for the affusion, since, where the patient is in a state of stupor, a powerful shock is needed to rouse him, and this, sponging cannot produce. Neither can sponging be recommended as a substitute for the other forms of bath, where the affusion is inapplicable, for the amount of cooling cannot be well regulated, and what is of importance, sponging is much more likely to produce catarrh than the baths, in which the whole surface of the body is at once exposed to a temperature lower than itself. But notwithstanding these disadvantages, all writers who have witnessed the practice of sponging the surface of the body in fever, are agreed that great benefits do result from it.

Dr. Bateman, after stating that, in the only two cases in which he was able to apply the cold affusion before the third day, the fever was not extinguished by its use, goes on to consider its employment in a subsequent stage, and his experience induced him to "substitute the sponge for the bucket or the shower-bath." He proceeds, however, to recommend local or general bloodletting in almost every case, and considers stimulus of every kind as almost universally pernicious. It would seem, then, that the fever which he had an opportunity of treating was of an inflammatory type, and such fever is as ill adapted for the external stimulation produced by the bucket or the shower-bath, as it is for the treatment by internal stimulus.

To the good effect produced by sponging the surface of the body, he however testifies—"It speedily reduces the temperature of the body as marked by the thermometer, is extremely grateful to the sensations of the patient, relieving his thirst and the restlessness occasioned by the irritation of heat, and is not unfrequently followed by quiet slumber and gentle perspiration."

It is much to be regretted, that many modern

physicians have not only abandoned the use of the bucket, but have thrown away the sponge also.

Dr. Tweedie says—

"When the fever is advanced, the heat of the water should not be more than 15° or 20° below the heat of the body. Indeed, when the patient is weak, or when the fever has run on to the ninth or tenth day, sponging the body with cold or tepid vinegar and water is preferable to the cold affusion."

"The advantages of the cold affusion in fever have been acknowledged by almost every writer or practitioner who has adopted the practice. Our own experience of it certainly accords with that of others, as to its efficacy in reducing the febrile heat and moderating the symptoms; we freely confess, however, that there are few patients who can be induced to submit to a remedy so inconvenient and so repugnant to their feelings, and unless the practitioner can show urgent reasons for its adoption, he will generally find both the patients and relatives resist the practice. We have certainly never had the opportunity of witnessing a single case out of a considerable

number to which the cold affusion was applied, in which the fever was cut short, though all the patients felt afterwards greatly relieved, and in some the duration of the fever was probably shortened."

Dr. R. Williams was much prejudiced against the cold affusion. It does not, however, appear that this prejudice was founded on personal experience. He quotes several authors of eminence against the cold affusion, but any one who may take the trouble of consulting the originals, will find that the extracts he makes are calculated to produce in the reader a conviction of the uselessness of this practice which those authors were far from feeling. Nothing would be easier than to prove this by counter-quotations from the same authors, but my present limits will allow me to consider but one objection, which he brings forward against the numerous facts adduced by Dr. Currie, in favour of the practice. Dr. Williams cannot, in the teeth of Currie's cases, altogether deny the benefits resulting from this mode of practice, but he rather disingenuously attributes the urgent symptoms which it relieved, to previous bad

management, and quotes a case from Currie to prove this. He considers that the great heat and fever observed by Currie in his cases was "*artificially produced*" by a heating mode of treatment, and goes on to state, "Where the necessity for the affusion has not been artificially created, the practice has seldom been beneficial." He makes no mention of the numerous cases related by Dr. Currie, where *no* treatment whatever had been adopted previous to the affusion. Dr. Horn's patients were certainly not subjected to a heating plan of treatment, for they had in general no medicine or stimulus, very scanty diet, little bed-covering, while the windows of his large roomy wards were open day and night, at a time when the mercury in the thermometer outside was often below the freezing point, and yet he found that the heat of his patients was so great as generally to call for the use of the affusion several times in the twenty-four hours, and the same marked benefit attended the practice that was observed by Dr. Currie.

Dr. Watson says,—

"The cold affusion is not more effectual in cutting fever short, than the treatment by

emetics; and it has these great disadvantages, that it fatigues and alarms the patient, and when the vital powers are naturally feeble or much depressed by the disease, the very shock of the affusion may be attended with injurious consequences." He then goes on to recommend the practice of cold or tepid sponging of the surface.

Dr. Watson's "Lectures on the Theory and Practice of Physic" is so excellent a work, and so widely circulated, that I cannot refrain from answering any assertion which has the recommendation of his name and authority.

With respect to the power of the cold affusion to cut fever short, I cannot speak from my own experience, never having had the opportunity of trying it. But that its employment in proper cases neither fatigues nor alarms the patient, has, I hope, been already sufficiently proved.

When the vital powers are naturally feeble, or much depressed by the disease, if the debility be *real*, the affusion is absolutely counter-indicated.

I feel perfectly certain that, where the symptoms exist which have been already often

mentioned as calling for the use of the cold affusion, its employment will always be attended by marked benefit, but I am equally certain, that so powerful a remedy, if improperly used, may be productive of the greatest mischief, and I again state my belief that the affusion has been brought into such undeserved discredit, *only* by the ill consequences attending its improper application.

It has been my object in the foregoing remarks to give the results of my own observation and experience, both as to the cases in which the cold affusion may be expected to be useful, as also to the mode of treatment proper to be adopted when the affusion is inapplicable. We are indebted, for some of these modifications of hydropathic practice, to Priesnitz, to whose great powers of observation and really extraordinary talent for treating disease, I bear willing testimony. Those, however, who expect from Priesnitz or his followers indications sufficiently exact to serve as a guide in the treatment of acute disease, will be signally disappointed. I have endeavoured to make one step in the right direction, and to recal the attention of the

profession to this really important subject, and I cannot help cherishing the hope that I shall yet see a fair trial given to the pretensions of hydropathy, if in no other disease, at least in typhus.

CHAPTER III.

ON THE MODE OF TAKING THE TEMPERATURE OF THE HUMAN BODY.

As in some of the annexed cases the temperature of the patient is given, and observations made on it with a view to determine the immediate effects of the different kinds of baths, I shall say a few words respecting the manner in which I took my measurements, as, unless I mistake much, they were noted with greater accuracy than has been usual with previous observers.

The thermometer I made use of, was constructed according to my directions by Greiner, of Berlin, who enjoys a very high reputation for the accuracy and delicacy of his instruments. In both of these essential particulars the thermometer he made for me leaves nothing to be desired. The scale adopted is the centigrade; the bulb is large and cylindrical, while the stem

is exceedingly slender. By this means each separate degree is as large as it could conveniently be made. The scale extends from 8° to 50°, and this interval is twelve inches in length, so that each degree is nearly three and a half lines long. Each degree is again subdivided, and a difference of one-twentieth of a degree can be distinguished with accuracy.

I have said thus much about the thermometer I employed, because the reliance to be placed on observations respecting minute changes of temperature must very much depend on the care taken by the observer to procure a trustworthy instrument.

The usual method of observing the temperature of the human body, is to introduce the bulb of a thermometer under the tongue, or into the axilla, and, leaving it there for a certain time, generally five to ten minutes, to mark the height to which the mercury has risen, and to assume this as the temperature of the patient's body.

This mode of measurement, however, is defective, and the results obtained by it in successive observations are not comparable with each

other. The mercury scarcely ever reaches its greatest height in so short a time. This, however, would be no objection if the mercury rose with the same rapidity in all cases; for then, the height to which it had risen in five minutes having been observed, though not indicating the true temperature of the surface, would at least give a result which might be compared to that obtained in another patient by leaving the thermometer in for the same time. But experience shows that, in different patients, and in the same patient at different times, the rate of rising of the mercury varies exceedingly, so that, while at one time it has become stationary in ten minutes, at another, the period may be trebled before it has attained its greatest height, and yet the temperature thus arrived at may be the same in both cases.

Whenever, therefore, the temperature of the body is to be carefully noted, the exercise of considerable patience is necessary, otherwise no reliance can be placed on the observation. The ball should never be removed until the observer is assured that the mercury has become constant.

As an instance of the manner in which the

mercury rises after introduction, I shall give two examples, taken at random from my Case-Book :—

UNDER THE TONGUE.

The case was one of typhus, occurring in a man.

October 22nd, 1850, 5 P.M.

5h. 8′ bulb of thermometer introduced under tongue. Before its introduction the mercury stood at 18·8 C.

		Increase in the height of mercury in each successive minute.
5h. 9′ ...	35·9	17·1
5h. 10′ ...	37·5	1·6
5h. 11′ ...	38·3	0·8
5h. 12′ ...	38·55	0·25
5h. 13′ ...	38·9	0·37
5h. 14′ ...	38·95	0·05
5h. 15′ ...	39·	0·05
5h. 16′ ...	39·05	
5h. 18′ ...	39·05	Stationary for two minutes.

IN THE AXILLA.

In another case of typhus, the following measurements were made in the right axilla :—

October 13th, 1850; 11¼ A.M.—P. 84, R. 24.

11h. 34′. Bulb of thermometer introduced into right axilla. Mercury stands at 14°.

11h. 37′ ... 39·4
11h. 39′ ... 39·6
11h. 40′ ... 39·7

11h. 42′ ... 39·8
11h. 44′ ... 39·9
11h. 47′ ... 40·
11h. 51′ ... 40·
11h. 53′ ... 40·
Stationary for six minutes.

In the first of these examples the mercury rose very rapidly in the first minute, and less in each succeeding minute; and in the second example, where the temperature was measured in the axilla, may be noticed the same rapid rise at first, and progressive diminution in the rate of rising afterwards. This progressive diminution in the rate of rise is not attributable to any defect in the instrument, which very rapidly assumes the temperature of any medium in which it is immersed. It may, I think, be accounted for in this way: taking the second example. During the first three minutes the mercury rose 25·4. At 11^h 37^m, therefore, 39·4 was the temperature of the surface of the skin in the axilla in contact with the bulb of the thermometer. But the temperature of the surface is in general below that of the blood circulating in the cutaneous capillaries, in consequence of external cooling. The cavity of the

axilla, together with the bulb of the thermometer in contact with it, were, however, during the time of the measurement, cut off from the cooling produced by evaporation, and the access of the cool external air, and therefore the cavity of the axilla would gradually assume the temperature of the blood circulating in the vessels of the skin forming its boundaries. This gradual approach of the temperature of the cavity of the axilla to that of the blood in its capillaries, was marked by the gradual rising of the mercury in the thermometer, till at last, after thirteen minutes, the mercury became stationary at 40°, and remained so for six minutes. This was therefore the temperature of the blood circulating in the capillaries of the skin of the axilla.

Repeated observations have proved to me, that if a thermometer be placed with its bulb under the tongue, at the same time that the measurement is being made in the axilla, the mercury will rise to exactly the same height in both cases, showing that the temperature of the blood circulating in the capillaries of the skin, and in those of the mucous membrane of the mouth is the same at the same time. The mer-

cury, however, attains its greatest height quicker in the mouth than in the axilla, which is accounted for by the greater delicacy and vascularity of the mucous membrane of the mouth, allowing the heat of the blood in its capillaries to pass through more readily than is the case in the skin, which, besides being less vascular, has a much thicker layer of non-vascular epidermis between the vessels and the external surface.

With regard to the time which must elapse after the mercury has become stationary, in order to be certain that it will rise no higher, experience has proved to me that two minutes is sufficient in the mouth, and five minutes in the axilla. In no case did the mercury, after having been observed stationary for that time, rise more than one-tenth of a degree, even if the thermometer (as was sometimes done by way of experiment) was left in the axilla for half an hour. The difference, indeed, was very rarely more than one-twentieth, unless when the fever was increasing, and then, of course, as the temperature of the patient was progressively rising, the thermometer would mark that increase.

In different cases the time required for the

mercury to reach the true temperature is very different. It varies according to the previous cooling of the surface, and to the activity of the circulation. It is also, perhaps, modified by other conditions not quite so evident, so that it is impossible to say with certainty, in any given case, in what time the constant temperature will be attained. I have never yet observed this time in the mouth to be longer than ten minutes, or in the axilla longer than thirty minutes. An observer who in such a case would be satisfied with five minutes in the mouth, or ten minutes in the axilla, would therefore risk an error perhaps of a degree; while an error of one-tenth of a degree is of great importance, when we consider that the temperature of the body is a direct index of the activity of the important chemical changes which are continually taking place in it. In making a thermometric observation, I therefore always carefully note down the progressive rising of the mercury, and do not assume it as stationary until it has been so for five minutes in the axilla, or two minutes in the case of measurement in the mouth.

With regard to the relative merits of the

axilla or mouth, as the place of measurement, the mouth has the advantage of the measurement being made quicker, but has the disadvantage that it is more troublesome to the patient, and utterly inapplicable if there is dyspnœa. It is also more dangerous to the safety of the instrument.

The axilla has the disadvantage that the measurement lasts longer, but this is counterbalanced in most cases by the presence of the thermometer not causing fatigue or uneasiness to the patient. There is also much less risk of damage to the instrument.

The mode of applying the thermometer in the mouth is as follows:—The bulb is introduced under the tongue, in which position the mouth is closed on it, and the lips must be pressed against the stem, to prevent breathing through the mouth. This may be done by the fingers of the patient, or of an assistant, as few patients possess sufficient muscular force in the lips to hold them closed firmly on the thermometer for ten minutes. The thermometer itself must be lightly held in the hand.

For measurement in the axilla, the bulb is

introduced well into the cavity of the axilla, the arm is then brought across the chest, and is held by an assistant, or if the patient be rational and quiet, it is easy, by a little contrivance, to support the arm in this position, without occasion for an assistant, and without causing the least fatigue to the patient. All access of air must be prevented by the arrangement of the bed-clothes. The thermometer does not require holding.

CASE I.

TYPHUS.

CHARLES DITEMAN, æt. 32, a potter, admitted into the Charité Hospital in Berlin, March 26, 1850.

The only account of his illness obtainable, is from himself, and, from the stupor in which he lies, is not much to be depended on. He states that ten days ago he had a shivering fit, after having for some days previously suffered from languor and uneasiness; after his shivering fit he had violent headache, and had been more or less delirious.

Present Condition. March 26th. Eleventh day of the Fever.—Is a strong-built muscular man, lies on his back, and has a stupid, heavy expression of countenance; answers questions wide of the mark; complains of frontal headache; is restless, and, when undisturbed, mutters unintelligibly to himself. Face flushed; skin hot. Twenty-six costo-abdominal respirations in the minute. Tongue slightly furred, dry, with red tip. *Abdomen* distended, tense, tympanitic; cæcal region tender on pressure.

On percussing the left lateral region of the chest from above downwards, the dulness caused by the spleen is found to commence from the seventh rib. In the eighth intercostal space this dulness is nearly three inches in breadth.

On percussing the posterior region of the chest, from above downwards, it is found resonant on both sides as low as the eleventh rib. On auscultation of the same part on both sides, the breathing in the lower third is weak and scarcely vesicular; in the upper two-thirds, vesicular breathing. Slight sibilus in parts. In front, vesicular breathing. Neither fever blotches, petechiæ, nor miliaria on the skin, but

many large patches of psoriasis in the process of healing.

The patient was now, 5 P.M., taken out of bed and placed in a shallow bath, one foot water; temperature, 77° Fah., which fell to 75° before he was removed. In this bath, his legs and feet were well rubbed by two assistants, the trunk and head watered from a pitcher with water taken from the bath. At first the pulse fell in frequency, but increased when he began to shiver, which occurred when he had been in for thirteen minutes. On the commencement of the shivering he was removed from the bath. The skin in the axillæ was still warm to the touch—with this exception, the surface of the body felt cold. He was now dried, and laid on his bed, wrapped loosely in a blanket. During the bath he became more rational, and immediately after it said, that the headache he had before felt had left him. Thirty-eight minutes after leaving the bath the skin was warm to the touch everywhere, except on hands and feet. He was now taken out of the blanket, had his shirt put on, and was then put into his bed, but had his feet still well wrapped in blankets. No

headache. Pulse 86; smaller than before the bath.

Twelfth day of the fever, 27th March, 9 A.M. P. 88; R. 22 in the minute.—After the bath last night, he was three or four hours before becoming thoroughly warm, and during that time was restless; after this he slept quietly the whole night. He is lying on his back, but still has strength enough to turn on his side. Expression of countenance heavy and stupid, but now answers questions rationally. Face but slightly flushed; skin dry, moderately hot to the touch. He has had two or three watery motions during the night, and passed them under him. Slight gurgling and great tenderness on pressure in the cæcal region. Spleen as yesterday. Urine high coloured; slightly turbid.

6 P.M. P. 92; R. 28 in the minute. Cheeks slightly flushed; Skin dry; heat of surface moderate.—He was now taken out of bed, and placed as yesterday in shallow bath, 77° Fah., in which he remained half an hour—all the proceedings during this time being the same as yesterday. At the end of the half-hour, the

temperature of water had fallen to 70°. During the bath he became much more rational; pulse fell in frequency; but he shivered so much towards the end that it could not be counted. The skin in the axillæ still warm to the touch when he was removed from the bath. He was now rubbed dry, wrapped loosely in a blanket on his bed, from which he was taken out in twenty minutes, which was as soon as he began to feel returning warmth. His shirt was now put on: he was lightly covered with bed-clothes; but the blanket was left over his feet.

7 P.M. P. 86; R. 24.—More rational than before bath, but still with stupid expression of countenance; ordered *ice-cap* to the head.

28th March, 9 A.M. P. 96, large and soft; R. 20, cost. abdom.—Is sleeping quietly, and slept well all night. Face slightly flushed; skin hot and dry. Passes his water under him. Appearance of urine altered—now clear and pale. Bowels have not acted since last night. Spleen as yesterday. Slight sibilus in parts, on both sides of chest behind. On percussion from above downwards, the sound does not become absolutely dull till the eleventh rib; but on the

right side, from the spine of the scapula downwards, the sound on percussion is slightly duller than on the left.

6 P.M. P. 94; R. 22. Skin dry and moderately hot.—Removed from bed, put into shallow bath; water five inches deep; temperature 72½° Fahrenheit. Treated in bath as before. After eight minutes began to shiver. Pulse ninety-six, and small. Two minutes after this he was removed, rubbed dry, and laid on bed, wrapped loosely in a blanket. On removal from bath the skin still felt warm to the hand, though he was shivering. Stupor much less than before the bath. Thirty minutes after bath, pulse ninety-two; skin warm to the touch, though he says he still feels chilly. A vibratory motion in the fibres of the pectoralis major is all that remains of the convulsive action of shivering. The blanket was now removed, being only left about the feet, and he was covered lightly with bed-clothes.

7^h 15^m. P. 92; R. 20.—Is sleeping quietly, and has been asleep for the last half-hour. Skin soft, and not hot to the touch.

8^h 15^m. P. 82; R. 15.—Surface warmer. He is still asleep.

10h 30m. P. 92, R. 18.—Sleeping quietly.

29th March, 9 A.M. P. 94; R. 22.—Slept quietly the whole night. During the night as the head became morbidly hot, the ice-cap, which had been discontinued yesterday, was resumed. Skin dry and soft, moderately hot. Expression of countenance still stupid, but answers questions rationally. The headache, which was severe on his admission, has never returned; nor has he had, since the first bath, any of the muttering low delirium which was noticeable at first. Urine rather more high coloured. Passed two watery motions during night. Both urine and fæces pass under him.

5 P.M. P. 94, full, very soft; R. 24.—Skin dry and moderately hot; still stupid, but no delirium. Shallow bath 77° Fahrenheit. Proceedings as before; in fifteen minutes began to shiver, and was cold to touch. Removed at once; rubbed dry. Wrapped up in blanket as before, and removed in twenty minutes, and lightly covered up in bed. The surface is warm all over, except hands and feet. Shivering has not completely ceased.

7 P.M. P. 92; R. 28.—Has passed five or six

watery yellow motions to-day under him, one while in the bath.

Fifteenth day of the fever, 30th March, 9 A.M. P. 96, full; R. 22, costo-abdom.—Skin still dry, and moderately hot. Lies almost constantly on his back; has had one motion in the night, which, as usual, was passed under him. Abdomen tense. Gurgling on pressure in the cæcal region. Tongue dry, but not much furred. Spleen as yesterday. Is more rational. Head still morbidly hot, on which account continues to wear the ice-cap. Slight cough. Expectorates a small quantity of muco-purulent sputa. Sound on percussion, and auscultation unchanged. Urine high coloured; still passed under him.

5½ P.M. Fever increased, P. 96, more resisting; R. 24.—Face more flushed. Skin dry, pungently hot to touch. Tongue dry, red, scarcely furred. Three watery motions passed under him this afternoon. Abdomen soft, moderately enlarged. On making pressure in the cæcal region, gurgling is still felt, but he shows no sign of pain. A number of fever blotches are now observed for the first time on his chest and abdomen.

6h 45m P.M.—The shallow bath, 75° Fahrenheit, was now used as before, less rubbing, however, being applied to feet and legs. At the end of fifteen minutes began to shiver, and one minute afterwards was removed from the bath. At this time the feet and legs were colder than trunk. Was rubbed dry, and placed in blanket as before. The shivering continued for half-an-hour after the bath, but the blanket was removed, and he was put to bed before it was quite over.

11h 15m P.M. P. 100, but quite soft.—Is sleeping quietly. The feverish restlessness which existed before the bath was completely subdued by it, and he has slept ever since.

31st March, 9 A.M. P. 92; soft, R. 19.—Has slept well all night. No delirium. Slight occasional cough, with scanty muco-purulent expectoration. Skin dry, but not so hot as yesterday. Face less flushed. Diarrhœa continues. Still passes his motions under him. Is heavy, but rational. Abdomen soft, not distended.

Lungs. Percussion. — The dulness begins behind, on the left side from the ninth rib downwards. On the right from the tenth.

Auscultation.—On left side behind, in lower third, during deep inspiration, clear, loud, large crepitation. During expiration, bronchial breathing. Higher up, large crepitation, and almost vesicular breathing. On the right side, in the lower part, breathing neither bronchial nor vesicular, with rhonchus.

Starch enema three times a day. Omit the ice-cap.

6 P.M. P. 102, more resisting; R. 24.—Skin hot. Face flushed. He wishes much for his bath, which cannot, however, be procured.

1st April, 9 A.M. P. 92; R. 29.—Is more conscious, and now complains, for the first time, of great prostration of strength.

Spleen.—Dulness unchanged. The auscultatory signs of the lungs not materially altered. Diarrhœa much diminished.

Omit starch enema.

$11^h\ 20^m$ A.M.—Shallow bath 68°, of six minutes duration, at which time shivering commenced He was now removed and dried, &c., as usual.

5 P.M. P. 104; R. 24.—Face somewhat flushed.

A cloth wetted with ice-cold water to be kept applied to the head.

2nd April, 9 A.M. P. 110.—Diarrhœa slight. Signs on percussion and auscultation unchanged. Cough continues pretty frequent, with muco-purulent expectoration. He muttered much during the night in his sleep, but is now sensible. A superficial erosion is noticed on the sacrum.

5½ P.M. P. 96, resisting; R. 19.—Face flushed. Skin hot and dry. No delirium during the day. Is stupid, but still answers questions rationally.

6h 26m P.M.—Shallow bath 77°, duration sixteen minutes. Shivering began about a minute before his removal. Treated as usual after bath. Passed one motion in the bath, which has been the case the last three times. Four watery motions during the last twenty-four hours.

3rd April, 9 A.M. P. 102, soft; R. 22.—The shivering, after bath last night, continued till half-past seven o'clock. He then became slightly delirious, but went to sleep at nine, and slept well till four this morning, when he again became delirious. Orders had been given to apply cold wet cloths to the head whenever this took place. At present he is rational.

6 P.M.—No delirium during the day, but he has been very restless.

Shallow bath 79°, duration twelve minutes. Shivering began one minute before leaving bath.

11h 30m P.M. P. 104; R. 24.—Is sleeping soundly.

4th April, 9 A.M. P. 100; R. 22.—Face not flushed. Skin dry, but soft; is perfectly rational, but heavy. Slept well the whole night. Tongue dry in the centre. Has had no motion. Urine more copious and lighter coloured. Cough frequent. Sputa muco-purulent, but the auscultatory sounds of catarrh are diminishing.

6 P.M. P. 106.—Cheeks flushed. Skin dry and hot; is much discontented that he is to have no bath to-night. Had a yellow lumpy motion after clyster.

Twenty-first day of fever, 5th April, 9 A.M. P. 92; R. 20.—Face flushed. Skin hot and dry. Tongue red, dry in centre. Slept well. For the last day or two has had rather more appetite, which has been gratified, but only by liquid and farinaceous food. To-day he feeds himself for the first time. Two tolerably firm motions after clysters. Abdomen soft. No tenderness on pressure.

5 P.M. P. 100, full.—Face much flushed. Skin

hot and dry. Tongue dry, red. Is quite clamorous for his bath.

5h 57m.—Shallow bath 77°, twelve inches of water. While in bath, water was frequently poured on his head from a pitcher, from a height of one foot. The legs and feet were rubbed during the bath. Duration of bath, fifteen minutes. Treated as usual afterwards.

Twenty-second day of the fever, 6th April, 11 A.M. P. 98, full.—Skin dry. Tongue moist. No motion. Appetite improving. Abdomen not distended. No tenderness on pressure. Slept well the whole night.

6½ P.M. P. 104.—Gentle perspiration on the forehead and hands. The hope of its becoming general deterred me from using the bath.

7th April, 9 A.M. P. 98, soft; R. 30.—Skin dry. Tongue moist, covered with white fur. One lumpy yellow motion after clyster. Slept during night, but the perspiration did not become general. Cough frequent. Sputa muco-purulent. Auscultatory signs of catarrh diminishing.

6 P.M. P. 180, full and soft; R. 24.—Skin moderately hot; dry everywhere but on the

forehead, where he perspires. Is much more sensible. Complained to-day, for the first time, of his bed-sore, which has been increasing in extent ever since 1st April. It is on the sacrum, of about the size of the palm of one's hand, but not deep.

Twenty-fourth day of the fever, 8th April, 9 A.M. P. 108, full and soft.—Last night broke out into profuse perspiration, which seems to have continued for two or three hours. The whole body is now in a gentle perspiration. Slept well. Is perfectly rational; complains of great weakness. Urine pale and copious. Enjoys his food, but is still kept on farinaceous diet.

5. P.M.—Gentle perspiration still continues. Cough frequent; short.

9th April, 9 A.M. P. 92; R. 18 (counted during sleep).—Did not sleep much during night, on account of the pain caused by his bed-sore, but is now sleeping soundly, and in a general perspiration. No motion since yesterday.

5 P.M. P. 108; R. 30.

10th April, 9 A.M. P. 92.—Skin soft, but not perspiring, nor has he sweated during night. A strong disagreeable musty smell proceeds from

the whole body. Expression of countenance rather more heavy than for the last two days. Wishes much for a bath.

9^h 25^m A.M.—Placed in a shallow bath of 79°. After one minute the temperature was reduced by cold water to 74°. In the bath he was treated as usual; but before removal, four buckets of water from the bath were poured over his head. The duration of bath was ten minutes. He was taken out, dried, and put to bed, covered with usual bed-clothes. No shivering occurred, and scarcely a feeling of chilliness.

10 A.M. P. 80.—Skin cooler. Has had slight shivering since the bath. Feels much refreshed.

$11\frac{3}{4}$ A.M. P. 82.—Skin cool.

5 P.M. P. 112.—Face flushed. Skin hot. Has not perspired. The bed-sore, which has hitherto been dressed with simple ointment, is beginning at the margin to show healthy granulations.

11th April, 9 A.M. P. 100; R. 20.—Is lying on his left side. Skin dry, but he perspired a little during night on chest and face. Expression of countenance natural. The bed-sore is healing rapidly. Appetite good. Bowels rather

confined. Cough continues. Signs on auscultation are those of slight catarrh of both lungs.

5 P.M. P. 116.—Was taken out of bed, and placed in shallow bath 79°. Feet were rubbed while four buckets of water 59° were poured over his head. The whole operation lasted one minute and half. He was dried, and put to bed with usual bed-clothes. No shivering.

12th April, 9 A.M. P. 104; R. 28.—Is lying on his side. Has not perspired during night. Appetite good.

5 P.M. P. 116.—Skin dry and hot; but he has perspired on the whole body for two hours to-day.

13th April, 9 A.M. P. 112.—Skin dry; but he has perspired gently during night. Sleeps well. Enjoys his food. Bowels open. Bed-sore healing fast.

Up to the present time he has taken no medicine whatever, he was now ordered, Infusum Cinchonæ, ʒi ter die.

From this time to 22nd April, he went on much in the same way as for the last day or two. The pulse and breathing continued frequent; the former never below 100, and sometimes as high

as 120; but that this frequency was owing to debility, and not to any continuance of the typhus process, was proved by all the nutritive processes going on well. The appetite was good. Bowels regular. Tongue moist, and but slightly furred. The bed-sore during this time diminished to about one-quarter of its original size. Sleep was good. The cough continued to diminish. He perspired for some hours daily. The intellect, which was perfectly clear on the 11th, has remained so ever since.

22nd April, 9 A.M. P. 116.—Appetite good. Tongue clean. Sleeps well, and is improving in strength.

Moselle wine, half-a-pint daily; to continue his bark mixture; diet increased in quantity and improved in quality; still no solid meat allowed.

During the next week he went on gradually improving, though the pulse remained frequent; at the end of this time the bed sore had completely healed, and he was able to sit up for two or three hours a day, and in a short time left the hospital perfectly well, and fit for work.

The foregoing case is given at considerable

length, and this was necessary to show the *immediate* effects of the treatment employed; but as the leading features of the case are somewhat obscured by this detail, it may not be useless to give a short summary of its progress, and of the modifications in its course, which may fairly be attributed to the treatment.

The patient was admitted on the 11th day of the fever, dating its commencement from a well-marked rigor, which was subsequently ascertained from his friends to have occurred on the 15th of March. Up to the time of his admission he had suffered from severe headache, stupor, delirium, and loss of sleep. These symptoms were also present when he first came under observation, combined with increased heat of the skin, and an increase in the frequency of the pulse and respiration. Diarrhœa and catarrh also existed. A shallow bath was immediately given of a quarter hour's duration, after which the headache and delirium were found to have disappeared, the fever to have diminished in intensity, and quiet sleep followed. The fever, however, did not appear to be materially shortened by the treatment, though all unplea-

sant symptoms were kept in check by the daily employment of the shallow bath, the headache never returned, nor did the patient again become delirious, except once in the night of the 2nd of April. His sleep also became tranquil.

The diarrhœa and catarrh were not made the subjects of especial treatment. They, however, subsided gradually. On the 30th, the fifteenth day of the fever, the characteristic eruption of typhus was first perceived. A bed-sore formed on the sacrum in the third week of the fever, and somewhat retarded the convalescence.

At the end of the third week, the symptoms referable to the nervous system began to dissappear, and on the night of the twenty-third day of the fever a general perspiration showed itself for the first time, and recurred on several of the succeeding days. He now slowly regained strength. His appetite returned, and the bed-sore healed, proving the improvement in nutrition. The pulse became more frequent during convalescence than it had ever been during the continuance of the fever. This was attributable to the debility left behind.

CASE II.

TYPHUS.

DUMDEY, æt. 40.—A somewhat spare-built woman. Was admitted into the Charité Hospital, Sept. 27, 1850. Nothing known for certain of the history of her complaint. On her admission, 4 P.M., she was in the following state.

The prostration of strength is not extreme, as she can still turn on her side without assistance. She however, commonly lies on her back. The expression of her countenance is *stupid* and apathetic, but when roused, she answers questions relative to her *present* feelings intelligibly: on being, however, asked about the *duration* of her present illness, her countenance betrays perplexity, and she soon relapses into her previous state of apathy. At *present* she is suffering from headache and giddiness. No ringing in the ears. No real deafness. Her slowness in answering seems owing to the oppressed condition of her intellectual powers. No flashes of light before the eyes. Face flushed. Skin hot and dry.

On the chest and abdomen are numerous fever blotches. Tongue slightly furred, dry in centre. Abdomen somewhat enlarged, soft, tender on pressure in cæcal region. On examination of spleen, the sound on percussion in left lateral region is dull from the seventh rib downwards. No tumour can be felt under the margin of the left false ribs. Cough very slight. Does not expectorate.

Thorax.—Percussion behind, on both sides, begins to be dull over the tenth rib. On auscultation, sibilus and indistinct breathing are heard on both sides. At the base of the right lung behind, large crepitation. P. 103, soft, tolerably full; R. 28.

Milk diet. No medicine. As much water as she likes to drink.

28th Sept. 10 A.M. P. 98; R. 38.—Tongue dry and brown. Lips dry, covered with sordes. The stupor observed yesterday, continues. She slept little during the night, but was not delirious.

4½ P.M. P. 99; R. 32.—Skin hot and dry, but she has perspired for an hour this afternoon. Tongue dry and brown. Stupor continues.

It was now determined, on account of the con-

tinuance of the stupor, to try Currie's affusion, and, at the same time, carefully to note the diminution of temperature produced by it.

4h. 33′ thermometer introduced into left axilla.
4h. 35′ ... 38·2 C.
4h. 36′ ... 39·1
5 P.M. 40·8 At this point mercury is stationary.

5 P.M. P. 103 ; R. 36.

5h 25m, P.M. She was now placed in an empty tub, and held in a sitting position by an assistant, while six buckets of cold water, temperature 48° Fah., were dashed successively on her head and chest, from a height of one foot and a half. Between each bucket, time was allowed her to recover breath. The whole proceeding lasted two minutes and a half. She was then lifted out, dried, and put to bed, covered lightly with bed-clothes. On the first shock of cold water she cried out loudly, and, as might be expected, during the whole process the inspirations were deep and sobbing. Immediately after the bath the tongue was found moist and soft ; the stupor very much diminished.

The thermometer was again inserted in left axilla, at 5h 33m.

5h. 33′ ... 21· C.
5h. 38′ ... 38·2 [is stationary.
5h. 52′ ... 39·2 At this temperature mercury

5h 38m. P. 95; R. 32.

5h 50m. P. 94; R. 31.—Complains now, for the first time, of chilliness, and the masseter muscles are twitching slightly.

29th Sept. 11 A.M. P. 96; R. 31.—Slept very little during the night, and groaned frequently, but was not delirious. Stupor much less. Is quite conscious, and somewhat irritable. Answers more readily. Face flushed. Skin hot and dry. Tongue dry and brown. Sordes about lips and teeth. No motion since yesterday. The fever spots continue. Appearances on percussion and auscultation, much the same as on admission.

5 P.M. P. 103; R. 27.

5 P.M. thermometer introduced into right
5h. 3′ ... 38·5 [axilla.
5h. 8′ ... 39·9
5h. 9′ ... 40·

Owing to circumstances, the measurement was obliged to be discontinued, so that the real temperature could not be ascertained; but judging from the rate of rise of mercury, it must have been nearly 41°.

To-day, we resolved to alter the treatment, and not to repeat Currie's affusion, for, though ground had been gained, in the decided diminution of stupor, the irritability of the nervous system appeared to have been increased by it. We therefore determined this evening to try a less exciting, but equally cooling method, and placed the patient, at 5^h 11^m P.M., in a sitting position in a shallow bath 72° Fah., ten inches deep. In this the feet were constantly rubbed, while water from the bath was gently poured from a pitcher over the head and trunk; but every now and then this was intermitted, and the body was rubbed by an assistant with wet hands.

5^h 20^m.—She now for the first time complains of feeling cold. She was immediately taken out of the bath, dried, and put to bed, lightly covered with bed-clothes. The duration of the bath had been nine minutes. The temperature of the bath at its termination was 74° Fah., therefore two degrees higher than at its commencement; the temperature of the air at the same time being 66° Fah. An estimate may thus be formed of the great amount of heat,

which must have been given off by the patient's body, to raise, by two degrees, the temperature of the large body of water in which she had remained for nine minutes. During the bath the stupor diminished much, and she even became sufficiently roused, to rub her chest with her own hands, though, of course, but very feebly. She had no shivering during the bath.

5h 32m P. 88; smaller than before the bath. R. 28.

30th Sept. 10 A.M.—Last night she began to shiver soon after half-past five P.M. The shivering was violent, and accompanied with chattering of teeth. It did not cease till nine P.M. *She then fell asleep and slept soundly till after midnight.* She has also slept at intervals this morning. At present, is rational. Has less stupor. No deafness. No headache, but a feeling of giddiness. Great prostration of strength, as before. Face flushed. Skin hot and dry. Tongue dry in centre. Abdomen distended, soft, tender on pressure in cæcal region. Bowels have not acted since the day before yesterday. Urine clear, high-coloured.

5h 45m P.M. P. 115, pretty full; R. 28.—Tongue

dry, except at margin. No motion. She has slept at intervals during the day. Has been sweating this afternoon, and is still perspiring on chest, but face and extremities are dry and hot. The perspiration being only partial, and the feverish heat of skin being high, I was not deterred from again using the means which had proved of such advantage yesterday.

5h 48m.—Shallow bath 72° Fahrenheit, six inches of water. Treated in bath as yesterday.

5h 55m.—Removed from bath. Dried and put to bed. Skin cool. Feels much refreshed. No shivering, either now or during the bath.

1st Oct. 10 A.M.—Shivering began last night about half-past six, and lasted till eight P.M. From this time till past midnight she slept soundly, and has slept at intervals since. At present P. 104; R. 32. Countenance less stupid. Understands and answers readily. Abdomen enlarged, tender in cæcal region. Bowels have not yet acted. Urine (drawn off by catheter) high coloured.

5 P.M. P. 108, tolerably full and soft; R. 36.—Skin dry.

2nd Oct. 10 A.M. P. 102; R. 36.—Countenance

rather more stupid. Face flushed. Skin hot and dry. Tongue furred, and would be dry, if she were not constantly drinking cold water. Fever spots continue. Abdomen much distended, very tender in cæcal region. Still no motion. Cough but slight. Slept the whole night, and dozes this morning.

4 P.M. P. 108 ; R. 31.—Skin hot and dry.

4h. 10′ thermometer introduced into left axilla.
4h. 15′ ... 39·6
4h. 17′ ... 40·
4h. 19′ ... 40·4
4h. 20′ ... 40·6
4h. 26′ ... 40·8
4h. 30′ ... 40·8

5^{h} 15^{m} P.M.—As the stupor was now very slight, while the temperature continued high, it was determined to substitute the cooling and sedative influence of a warm, for the cooling but exciting influence of the cold bath. She was therefore placed in water of 95° Fahrenheit up to the chin. A cushion was put under her, and supports were contrived so that no muscular exertion on her part was necessary. Removed from bath at six P.M. During the bath she was very comfortable, and did not seem to think the time tedious.

3rd Oct. 11 A.M. P. 96; R. 32.—Skin dry, but

not so hot as yesterday. Abdomen not so much enlarged. A warm water enema administered last night, came away without fæces. Urine (still drawn off by catheter) muddy, acid. Began shivering last night soon after bath, and this continued till eight P.M. *Slept all night.*

4½ P.M.—Placed in warm bath 93°. Water up to the chin. Supported and made as comfortable in the bath as yesterday. Remained in, an hour. Shivering began soon after her removal and lasted half-an-hour.

4th Oct. Noon.—Slept well the whole night. *Is in a general perspiration,* and has been so for half-an-hour. P. 96.

6 P.M. P. 104, full and soft, R. 36.—Face flushed. Skin hot and dry. Continued sweating till half-past three P.M. Urine high coloured, clear, passed voluntarily.

5th Oct. 9 A.M. P. 100.—Slept well. Tongue dry in centre. One large tolerably consistent motion followed the application of an enema containing 1 oz. castor oil last night. Commenced sweating about midnight, and this continued till seven A.M. this morning. The perspiration was general, including the hands and feet.

5 P.M. P. 102.—Not perspiring, but skin soft.

6th Oct. 10 A.M. P. 102; R. 38.—Skin hot and dry. Slept pretty well. Has not sweated during night. Bowels not again open. Tongue furred, dry in centre.

5 P.M. P. 112; R. 38.—Skin dry. Has had a slight partial perspiration during the afternoon.

5h 30m.—Placed up to the chin in water 93°, in which she remained three quarters of an hour, and before removal had three buckets of water from the bath poured over her head.

7th Oct. 10 A.M. P. 99.—No shivering last night after bath. Slept the whole night. No perspiration. Skin hot, moist in parts. Tongue dry in centre. Is perfectly rational. No headache.

4h 30m P.M. P. 106.—Has had no motion for two days. Abdomen enlarged.

Enema of cold water, 70° Fahrenheit, half-a-pint.

8th Oct. 10 A.M. P. 96; R. 36.—Tongue dry in centre. Skin hot and dry. Is perfectly conscious. No headache. Abdomen tense, distended. Has

had three cold clysters, which have all come away without fæces.

Enema with 1 *oz. castor oil.*

4½ P.M. P. 94; R. 29.—The skin on trunk is just beginning to be moist; on the extremities is still dry and hot. One motion after clyster.

9th Oct. 11 A.M.—Perspired gently from five to eight P.M. yesterday. Slept well. Appetite returning. Tongue moist, with a thick yellow fur. P. 84; R. 24. Urine thick, alkaline. The muddiness is found to be owing to the presence of pus and triple phosphates. The bladder is emptied voluntarily and perfectly. No tenderness on pressure in the hypo-gastric region, but leucorrhœa is present.

6 P.M. P. 104; R. 32.—Was in a general perspiration from two to five P.M. Skin at present hot and dry. No motion since yesterday.

10th Oct. 10 A.M.—P. 84; R. 30.—Tongue moist. The fur is separating. Skin dry but soft. Is perfectly rational.

5½ P.M. P. 96.—Is in a general perspiration. From this time she continued to improve gradually. The frequency of pulse and breathing progressively diminished. Appetite improved.

Strength returned. Leucorrhœa ceased. Urine became clear and acid. On the 18th October, she was able to sit up in bed, and on the 28th got up for the first time. Soon after, she left the hospital cured. No bed-sores occurred in this case.

The only medicine taken by this patient was an infusion cinchona, a table-spoonful every four hours, ordered October 12. This, however, appeared to have no effect, either good or bad, on the progress of her convalescence.

CASE III.

TYPHUS.

In the following case the cold affusion was the principal means used, and the effects observed may be considered (as far as my experience goes,) those which may always be looked for when the symptoms are such as to call for its application. These symptoms are briefly—great stupor and but little irritability of the nervous system, combined with a high temperature. Should the first

application render the patient irritable, I recommend a change in the mode of treatment.

HAUSTON, æt. 21, a cooper. A strong-built muscular man. Admitted, 13th September, 1850.

Was first taken ill on the 4th September, with headache, lassitude, and pain in the back, which symptoms continued till the 8th, but were not severe enough to oblige him to leave work. On the 8th, the headache increased; he had much feverish heat, with thirst, lost his appetite completely, slight diarrhœa commenced, and, on the 9th, the debility was so great that he was unable to leave his bed. No shivering fit occurred. These symptoms continued to increase up to the time of his admission, when the diarrhœa was frequent, headache violent, expression of countenance stupid and perplexed, but he answered questions rationally. Prostration of strength great, but he is still able to lie on his side.

Starch and opium clysters.

14th Sept. 12 A.M.—Slept badly. Delirious during whole night. Is now restless and irritable. Expression of countenance stupid, but his answers to questions are rational. He com-

plains of violent frontal headache. Face flushed. Skin hot and dry. Complains of great thirst, and drinks cold water eagerly. Abdomen somewhat enlarged. Stools frequent, thin, yellow, containing white flocculi. The dulness over region of spleen begins from the seventh rib. No tumour can be felt. Tongue dry in centre. P. 112, full; R. 34, debility continues great.

4h. 29′ P.M. The thermometer was now introduced into the axilla.
4h. 47′ ... 41·1
4h. 55′ ... 41·1

5 P.M. P. 106; R. 32.—Skin hot and dry. Headache. Restlessness and diarrhœa continue as in the morning.

5h 30m P.M.—Was placed up to the chin in a warm bath of 32·5 C. (90½° Fahrenheit). In this he was kept for three-quarters of an hour, and, before removal, three buckets of the water from the bath were poured over his head. He had slight shivering, which did not, however, come on until after he had been replaced in bed.

6h. 35′. Thermometer again introduced into axilla.
7h. 3′ ... 40·1
7h. 9′ ... 40·2. At which temperature mercury is stationary.

The effect of the warm bath on the temperature, therefore, has been to reduce it by 0·9 C.

15th Sept. 10 A.M.—*Slept pretty well during the night.* Was perfectly quiet, and had no delirium. Diarrhœa continues frequent. At present, P. 96, R. 34. Skin hot and dry. Is rational, but heavy. Less irritable and much quieter than yesterday. Still complains of headache and giddiness. Face flushed. Tongue dry in centre. Slight occasional cough.

10h. 5′ Thermometer introduced into axilla.
10h. 39′ ... 40·2. At this temperature the mercury remained stationary.

6 P.M. P. 102; R. 34.—Has had five thin motions during the day. The clyster containing opium, given on the 13th, has not been repeated.

16th Sept. 10 A.M. P. 102; R. 34.—Slept but little last night. No delirium. Much severe headache and pain in the ears.

9h. 45′ Thermometer was introduced into axilla.
10h. 10′ ... 40·6. Mercury is stationary at this temperature.

5 P.M.—Continues much the same. P. 102. Diarrhœa continues.

17th Sept. 10 A.M. P. 96; R. 26.—Slept badly and was delirious at times during the past night. Does not complain of headache. Face flushed and perspiring slightly, the rest of the body dry and pungently hot.

5 P.M. P. 100.—Skin soft. A partial perspiration on the face and chest.

18th Sept. 10 A.M. P. 96; R. 30.—Slept pretty well during last night. Has had four thin motions. The blotches characteristic of typhus now appear, for first time, in considerable numbers on the trunk; fewer on the thighs. Tongue red and dry. The percussion over the spleen unchanged. Heart and lungs normal.

5 P.M.—Skin dry, very hot. Headache severe.

19th Sept. 10 A.M. P. 84; R. 30.—Has had four thin motions during the past night. Has been sweating this morning, and there is an eruption of miliaria over chest and back. Fever spots continue.

5 P.M.—Headache is again severe. Ringing in the ears. Skin hot and dry. Stupor has much increased since morning.

20th Sept. 10 A.M. P. 90; R. 30 (counted during sleep).—Was quiet during night, but

slept little. Face flushed. Skin hot and dry. Great stupor. Headache continues. Tongue dry and brown, but it is with difficulty that he can be prevailed on to show it. Diarrhœa continues Abdomen somewhat distended. There is tenderness on pressure, and gurgling in the cæcal region.

A cloth wetted with iced-water to be kept continually applied to head.

5 P.M. P. 86.—Stupor increased, and is now so profound that he can scarcely be roused. The deafness, which has been increasing for some time, is now almost complete. Face flushed. Head hot.

21st Sept. 10 A.M. P. 92.—Several motions during night passed under him. Was quiet, but did not sleep. At present, great stupor and deafness. Tongue dry and brown, can scarcely be protruded. Lips parched and covered with sordes. Fever spots and miliaria numerous.

To continue cold applications to head.

4 P.M. P. 90 ; R. 36.—Skin hot and dry except on forehead, where there is a little perspiration. Stupor profound. Muttering delirium. Great deafness. Prostration of strength is now so

great that he lies on his back, sinking down in bed, and is quite unable to turn. Thorax, on examination, appears normal. A superficial bed-sore on the sacrum was now observed for the first time.

4h. 12′. The thermometer was now introduced
4h. 25′ ... 40·2 C. [into axilla.
4h. 32′ ... 40·2 C.

Up to the present time, since the 14th, the patient has been left to nature, with the exception of the cold application to the head. The principal reason for this non-interference was that the pulse never became very frequent, and that on the 19th nature appeared to make an effort to decide the fever by a critical perspiration. It will be observed, that this perspiration took place at the end of second week of the continuance of the fever. He is now in the middle of third week, and the symptoms, instead of improving, become worse daily. The stupor, deafness, and prostration of strength are very great. Nights passed in a state of muttering delirium and without sleep, are wearing the patient out, and the appearance of the bed-sore proves the great exhaustion of the vital energies. Under these

circumstances I did not feel justified in trusting any longer to the unassisted powers of nature, and determined on trying the effect of the cold affusion, for which the case seemed eminently adapted. He was, therefore, taken out of bed, held in a sitting posture in an empty bath, while four buckets of water, 50° Fahrenheit, were dashed suddenly over his head from a height of three feet. A pause was made between each bucket to allow him to recover his breath. The whole proceeding was ended at 4^h 45^m P.M. He was removed, dried, and put to bed. The stupor had much diminished. He now puts out his tongue when desired to do so. The tongue has become moist. Face but little flushed.

4h. 48′ the thermometer was introduced into axilla.

5h. 12′ ... 39·2	4h. 51′ P. 95, R. 33.
5h. 35′ ... 39·2	4h. 55′ P. 92, R. 27
	5h. P. 88, R. 24
	5h. 13′ P. 86, R. 29
	5h. 38′ P. 76, R. 30

To continue cold cloths to head.

22nd Sept. 10 A.M. P. 87; R. 32.—*Slept well during the whole night.* Sleep began soon after removal from the bath. Sweated for one

hour yesterday evening, and again had a general perspiration from 2 A.M. to 6 A.M. this morning. Two thin motions during the night passed under him. Headache has disappeared; but ringing in the ears, earache, and deafness continue. Stupor has diminished, but is still intense. Tongue continues dry and brown. When desired to show it, he still is a long time before he can make up his mind to protrude it. Skin hot and dry. Perspiring slightly on face and chest. Miliary eruptions copious. Fever spots fading.

9h. 45′ thermometer introduced into axilla.
10h. 23′ ... 40·
10h. 30′ ... 40·05
10h. 38′ ... 40·05

5 P.M. P. 84; R. 32.—Skin hot and dry. Has not perspired during the day. Stupor again profound. He mutters much to himself. Cold affusion of six buckets 52° Fahrenheit, from a height of three feet. The operation lasted two minutes, and was terminated at 5^h 6^m.

5^h 13^m.—P. 90; R. 32.

5^h 30^m.—P. 86; R. 28.

23rd Sept. 9½ A.M. P. 79; R. 26.—Went to sleep soon after the bath, *and slept well*

the whole night. During the night and this morning had profuse general perspiration. Stupor has nearly left him. Countenance more rational. Now protrudes tongue as soon as desired: it is dry, but the coating of fur not so thick. Deafness diminished.

9h. 40′ thermometer introduced into axilla.
9h. 52′ ... 39·7
10h. ... 39·9
10h. 10′ ... 39·9

Cold application to head is to be discontinued.

4 P.M. P. 83; R. 38.—Has had one scanty thin motion. Stupor increased since morning. Cannot recollect that he had the affusion yesterday. Skin hot and dry. The affusion of six buckets was now again used as before.

24th Sept. 10 A.M., P. 86; R. 31.—Went to sleep soon after the affusion, and slept well the whole night. Has had four thin yellow motions passed under him as usual. Sweated on the whole body from five to six o'clock this morning. He still lies on his back, sinking down in bed; but the stupor is less than last night. Tongue still dry and brown. Bed-sore has spread both in extent and depth since Sept. 21st.

10h. 26′ thermometer introduced into axilla.
10h. 30′ ... 39·5
10h. 36′ ... 39·6
10h. 39′ ... 39·6

4 P.M. P. 94; R. 37.—No motion during the day. Stupor has again increased, and he can be roused only with difficulty.

4h 33m.—Cold affusion of six buckets, 44° Fahrenheit from the height of one and half feet.

4h 39m.—P. 94; R. 36.

4h 48m.—P. 80; R. 32.

4h 50m.—P. 76; R. 28.

25th Sept. 9½ A.M. P. 76; R. 21.—Slept pretty well. Had slight general perspiration this morning, but skin is now again dry and hot face flushed. Is still stupid. On being questioned, says he has no headache. Slight occasional cough with expectoration of a small quantity of mucus is present, and has existed for some days. The bed-sore is beginning to show healthy granulations.

9h. 35′ thermometer introduced into axilla.
9h. 50′ ... 39·
9h. 55′ ... 39·1
10h. 3′ ... 39·1

4 P.M. P. 87; R. 32.—Tongue dry, but soft. One motion of tolerably firm consistence.

26th Sept. 10 A.M. P. 76; R. 31.—Has had one scanty motion, before passing which he asked for the bed-pan. Tongue dry, but much cleaner. Slept well. Sweated a little this morning, but skin is now again dry.

5 P.M. P. 90; R. 38.—Skin hot; moist on the face and chest, dry on the rest of the body. Face flushed. Has still an expression of stupor. Tongue dry. No motion. The cold affusion of six buckets, temperature 44° Fah., was now applied as before.

27th Sept. 10 A.M. P. 72; R. 30.—Slept pretty well. Sweated for two hours this morning; skin now moist in parts. Stupor but slight. No motion. Tongue dry, but clean. Examination of spleen gives same results as before. Slight catarrh continues.

For several days his appetite has been improving, and a corresponding improvement in his diet has been made, which still, however, is composed merely of farinaceous food, milk, and broth. Bed-sore is healing.

5 P.M. P. 91.—No motion.

28th Sept. 10½ A.M. P. 92; R. 32.—Slept quietly. Sweated a little this morning. Stupor moderate. Tongue dry. No motion.

4 P.M. P. 85 ; R. 33.—Skin hot and dry, with the exception of slight perspiration on face and chest. One feculent firm motion. Face flushed. Expression heavy.

4^h 44^m.—Cold affusion of six buckets, 46° F., was now applied as before.

5^h 42^m.—P. 79 ; R. 31.

6^h 26^m.—P. 85 ; R. 28.

29th Sept. 10 A.M. P. 75 ; R. 28.—Slept well. Sweated one hour and half this morning on the whole body. Stupor and deafness are still considerable. Tongue red and clean. No motion. No miliaria. Fever spots have almost disappeared.

4. P.M. P. 76.—Has sweated somewhat in the afternoon.

30th Sept. 10. A.M. P. 72 ; R. 29.—Slept well. Had not sweated. Appetite improving. Bed-sore healing. One consistent motion. No miliaria. No fever spots.

5 P.M. P. 91 ; R. 36.—Skin hot and dry.

1st Oct. 10 A.M. P. 95.—Skin hot ; moist on chest and forehead. The epidermis is desquamating over whole body. Sweated for several hours during night.

5 P.M. P. 96; R. 36.—Face much flushed. Tongue dry. No motion for two days. Cold affusion of six buckets, 45°.

2nd Oct. 10. A.M. P. 88; R. 30.—Slept well. Deafness decidedly less. He also can be roused much more easily. Expression of countenance more natural. Tongue moist, slightly furred. No motion. Cæcal region still somewhat tender on pressure. Skin soft, moist; does not feel hot to the touch.

4 P.M. P. 96.—Skin dry, hot. One motion.

3rd Oct. 10. A.M. P. 72.—No sweating in the night.

4 P.M. P. 91.—Tongue nearly clean, moist. Is beginning to complain of hunger.

4th Oct. 10 A.M. P. 70.—Skin not abnormally hot to the touch. Tongue almost clean. Has been sweating for two hours during the night. Stupor completely gone. Deafness but slight. Expression of countenance natural.

4. P.M. P. 68.

From this time he improved daily. The appetite became ravenous. Digestion good. He recovered strength rapidly. On the 7th Oct. a thermometric measurement was again made,

when the mercury was found to become stationary at 37·8 C. He was now ordered decoction cinchona, a tablespoonful four times a day, but this did not seem to hasten the convalescence, and was given more to satisfy the mind of the patient than from any necessity. At the end of the month he left the hospital, fit for work.

This case exhibits the power of the cold affusion in diminishing fever, removing stupor, and producing tranquil sleep, which is the best means of recruiting the failing powers of the nervous system. It also shows the error of the assertion, that the cold affusion cannot be used with safety so late as the third week of the fever. The fear of producing a violent shock, when the patient is necessarily debilitated by the long continuance of the disease, is the reason commonly assigned for this restriction of the practice. In the foregoing case, the affusion was used for the first time on the 21st September.

On referring to the history of the commencement of the disease, the reader will perceive that no distinct rigor occurred from which the beginning of the fever could be dated. There are two points of time from which it might be

presumed to commence. The first decided symptoms of illness showed themselves on the 4th. If we date the commencement of the fever from this time, the 21st September was the eighteenth day of the fever. If, however, we consider the first five days of the illness only as the stadium prodromorum, and do not assume the fever to have actually begun until the 9th Sept., when the debility became so great as to oblige the patient to take to his bed, this would make the 21st Sept. only the 13th day of the fever. On the former supposition, the cold affusion was first used in the third week ; on the latter, at the end of the second week of the fever.

The symptoms which at that time presented themselves were undeniably of a very grave character, and the cold affusion was not only followed by a diminution in the intensity of the fever, and by tranquil sleep, but was also succeeded by a very marked effort of nature to decide the disease by a critical perspiration. This desirable result was, however, only partially accomplished. The fever, though it never regained its former intensity, still continued. It was still marked by increased heat and stupor;

and the cold affusion had to be repeated six times before these symptoms finally left the patient. The last time it was used was on Oct. 1st, which, if we date the commencement of the fever from Sept. 9th, would be the twenty-third day, so that in this case the cold affusion was several times used with marked benefit in the third, and once even in the fourth week of the fever; thus confirming the opinion, which I have elsewhere expressed, that where the symptoms are such as to call for its employment, the cold affusion may be used with safety and advantage at any period of the fever.

It may also be remarked, incidentally, that the diarrhœa was certainly not increased; and, indeed, appeared to be lessened by this mode of treatment.

This patient liked the affusion, and was always dissatisfied if it was omitted.

CASE IV.

ACUTE PLEURISY.

In the following case, the cold bath of long duration was the form of hydropathic practice used. In neither of the two following cases are the thermometric measurements given. Both occurred before I began to pay much attention to the temperature of the body.

GUSTAVUS BENKER. A weaver, æt. 22. Admitted into the Charité Hospital 28th March, 1850.

He states that, with the exception of the ordinary diseases of childhood, he has always enjoyed good health. He denies being addicted to intemperate habits, and his general appearance and physiognomy are not those of a drunkard. He was quite well up to yesterday, 27th of March. For two days previous, had been working at his trade in a very hot room, to the overheated atmosphere of which he attributes some tightness and oppression of chest, which he has felt since working in it. He continued up to 5 P.M. yesterday at work there, at which time, and while still in the heated room, a severe

rigor came on. He discontinued, therefore, from his work, went home, and took to his bed; covering himself warmly with bed-clothes.

The shivering, however, continued violent for five hours. About 10 P.M. he became warmer, shivering ceased, and he slept until about 3 A.M. this morning, when he was awakened by a severe stitch in the right side, which has continued up to the present time. He has also been hot, feverish, and uneasy, and has kept his bed during the day. His appetite has completely failed, and he has taken nothing to-day except some hot coffee, which he immediately vomited. Cough began this afternoon; it did not occur in paroxysms, but was harassing from the increase of pain in the right side, occasioned by each attempt to cough. Bowels have not acted since yesterday. He cannot refer his present illness to exposure to cold or draft. He has taken no medicine for it, and no treatment of any kind has been hitherto adopted. He was brought in on the evening of the 28th of March, just before I left the hospital. The case being evidently a serious one, and the disease on the increase, it was thought necessary imme-

diately to examine him, and the result of a careful examination was, that we determined not to subject him to active treatment forthwith, but to wait until next morning, when we should be enabled to form a much more correct judgment of the progress of the disease, and of the treatment to be adopted.

Present Condition.

28th March, 7 P.M.—Is a well-built, muscular, thick-set man, with a broad and particularly well-formed chest; fair complexion, and light hair. Is perfectly rational. Countenance expresses anxiety. He lies on his left side, owing, evidently, to the pain he suffers when he attempts to lie on his right side, or back. Face flushed. Skin hot and dry, except on hands and feet, the coldness of which is probably owing to his having been just brought into the hospital. Has, of course, no desire for food, and but little thirst. Tongue moist, covered with white fur. Pulse, 116, full and hard. Breathing twenty-six in the minute, cost.-abdom.; but it is difficult to count the breathing a whole minute without interruption, from a short, dry cough.

The deep inspiration preceding the attempt to cough, causes him acute pain in the right side, so that he can never expand his chest fully. This pain (as before mentioned) is much increased by any attempt to lie on the right side, or on the back. It is also increased by pressure between the ribs in the right lateral region, and such pressure induces cough.

Lungs.—Percussion: On the right side of chest, behind, the sound is clear, from above, downwards, as far as the eighth rib: it here becomes dull, and the dulness increases in intensity in the lower part. In front, on the right side, the sound on percussion is dull from the sixth rib downwards. In the lateral region, from the fifth downwards.

Auscultation: Over the space which, on percussion, gives a dull sound, bronchial breathing is heard during inspiration and expiration. Higher up on the right side the breathing is between vesicular and bronchial in type. No crepitation. No bronchophony. The thrill communicated to the hand, when the patient speaks, is as distinct over the dull portion as over the corresponding part on the left side.

No treatment was now adopted, as it was thought desirable to see what would be the natural progress of the case in the next few hours.

29th March, 9 A.M. P. 122, full and hard; R. 28, cost.-abdom. Face much flushed. Skin everywhere dry, and very hot to the touch. Scarcely slept at all in the night, owing to stitch in right side; continues on this account to lie on his left side. The thirst is now become intense. Bowels have not acted. Abdomen not distended. Tongue moist, covered with white fur. Urine high-coloured, clear, scanty, intensely acid. The tenderness on pressure in the inter-costal spaces on the right side has diminished.

Lungs.—Percussion: On the right side, in front, dulness begins from fifth rib downwards. *Behind,* the level of the dulness has risen by about one and a half inches since last night, and now begins on a level with fifth dorsal vertebra. The intensity of the dulness has also increased.

Auscultation: Bronchial breathing, as yesterday.

From this examination it is clear that the fever

has risen in intensity since yesterday; the pulse is more frequent; the heat and thirst are more intense. The quantity of fluid in the right side of the chest has considerably increased, and with this increase (as is usual) the severity of the pain has somewhat abated. The rapid progress of the effusion appears now to be the principal source of danger, for, in a very short time, if it continues, the right side of the chest will be full, and it is well known that effusions which have been, as in this case, accompanied by violent inflammation, even if the patient survives the acute attack, require months to be re-absorbed, and not unfrequently leave irreparable mischief behind them. Now the only means at our disposal for checking the progress of effusion in such a case, is to diminish the general fever and local inflammation of the pleura, and, from what I had both read and heard of hydropathic practice, I considered that both these results might be obtained by a direct and energetic cooling of the body. The patient, moreover, was well suited for trying the experiment. He had none of the prejudices against cold water that persons in his class of life generally entertain, especially when labouring under acute

disease, and he seemed not deficient in courage. He was easily persuaded to allow himself to be placed in a cold bath, and to stay in it as long as should be thought desirable. He was accordingly, at $11^h\ 20^m$, placed sitting in a shallow bath of 80° Fah., with water up to his navel, so that his lower extremities were completely immersed during the whole continuance of the bath. They were rubbed by an assistant, who was replaced by a fresh man as soon as he was tired, while I occasionally took water from the bath with a pitcher, and poured it over his head and trunk. In the intervals the trunk and abdomen were rubbed briskly by an assistant, who frequently wetted his hands in the bath, and splashed water from it over the patient's body. This rubbing was used especially when he complained of cold, which it somewhat relieved, and then water was again poured over the head and chest. On being first placed in the bath, the first shock of the cold obliged him to give a few deep, convulsive gasps, which, of course, for a time, greatly increased the pain in the side, but the breathing soon became quiet, and he then said that the pain had diminished. After

a quarter of an hour he began to shiver, and continued to do so until he was taken out, though, during the latter part of the bath, the skin did not feel cold to the touch. At the end of the bath, the skin in the axillæ did not feel hotter to the touch than in any other part of the body. During the bath he complained bitterly of the cold, and it was with great difficulty he could be persuaded to remain in it. Fifteen minutes after he had been in the bath, the temperature of the water had fallen from 80° to 77°, at which temperature it remained constant to the end, though no warm water was added. The temperature of the air at the same time was 61°. As the water during the whole time had been in constant agitation, and exposed thoroughly to the cooling influence of the air, it is evident that considerable heat must have been given off from the patient's body to maintain its temperature.

He was taken out at $12^h\ 10^m$, rubbed dry, and laid on his bed wrapped in a blanket and covered with bed-clothes. In this state he continued to shiver for thirty-five minutes, when the blanket was removed, and he was replaced in bed with

usual covering. The skin had by this time again become very hot.

5 P.M. P. 120; R. 20.—States that since the bath he has felt much cooler, and more comfortable than before. Pain in the side is so much diminished that he can now lie on his right side, or on his back, without inconvenience. Face flushed. Still complains of great thirst. Skin not so hot as in the morning, is moist on forehead, chest, and hands, dry on rest of body.

The abatement of the symptoms since the morning was, therefore, very satisfactory. There was evident diminution of feverish heat; and there seemed to be a disposition to a critical perspiration. The local inflammation had also diminished. Although the frequency of the pulse was the same as in the morning, it was still something gained that it had not increased, as almost always occurs from the increase of fever towards evening.

30th March, 9 A.M. P. 110, full, less resisting than yesterday; R. 16, cost.-abdom.

Slept well the whole night. Face less flushed than yesterday. Skin soft, moist, but not perspiring. The perspiration noticed last night

never became general; but a partial perspiration on the chest and hands has again been present this morning. He states that the pain in his side is rather worse than last night, but his statement is evidently not to be depended on, for he is lying on his right side, and the small number of acts of respiration in the minute also contradicts him. The reason for his making this statement appears to be that he is afraid of having another bath, and thinks by this means to escape it. Cough is less frequent, is still unattended by expectoration, and does not occur in paroxysms.

Lungs—Percussion: Behind, in lateral region, and in front, as yesterday. Dulness has ceased to extend its limit.

Auscultation: Bronchial breathing, as yesterday, but in addition, and over the same space, is heard a sound resembling, in all respects, the clear, loud, high-pitched crepitation, so often observed in pneumonia. Urine high-coloured, acid, clear, but depositing a yellow sediment on the addition of acetic acid. Tongue moist, with white fur. Abdomen soft. Bowels have not acted. Thirst much diminished, and he begins to call out for food.

12h 55m.—Placed in a shallow-bath 77° Fahrenheit, and treated as yesterday.

1 P.M.—The temperature of bath was now reduced by cold water to 72°.

1h 10m.—Began to shiver, and was immediately taken out, dried, and wrapped loosely in a blanket. During the bath the pulse became smaller, and was always about 100. Had no dislike to this bath, but was pleased with its cooling effect.

1h 25m.—Was removed from blanket and put to bed, with usual bed-clothes. Pulse 92.

5½ P.M. P. 103, soft; R. 24.—Face flushed. Skin hot and dry.

11 P.M. P. 92.—I visited him the last thing at night, because I thought it possible fever might increase, and make further interference necessary. He was, however, quiet and easy, and the frequency of pulse had diminished.

31st March, 9 A.M. P. 88, full and soft; R. 16. —Face not flushed. Skin dry, but cool. Has not sweated during the night. Slept well the whole night. Stitch has completely ceased. He can now draw deep breath without pain or producing cough. Appetite very good, and he feels,

in all respects, well. He can with difficulty be persuaded to keep his bed.

Lungs—Percussion: Behind on right side dulness begins on a level with the fifth dorsal vertebra, as before, but is less intense. The diminution in intensity is noticeable in front, and also in the lateral region.

Auscultation: As yesterday.

Urine acid, depositing a copious sediment of red lithates.

6 P.M. P. 86; R. 16.—Skin cool and moist. Urine clear.

1st April, 10 A.M. P. 98; R. 16.—Is sitting up in bed. Skin cool. Slight occasional cough without expectoration. Appetite good.

Lungs—Percussion: Dull over the same extent, but the dulness has diminished still more in intensity.

Auscultation: Bronchial breathing has disappeared, but the copious, loud, clear, large and small crepitation still continues on deep inspiration.

5 P.M. P. 78, soft.

2nd April, 10 A.M. P. 72.—Signs on percussion and auscultation not perceptibly altered.

5½ P.M. P. 60.—Skin cool. Appetite very good. Has been up to-day. His ruddy, healthy appearance, and almost undiminished strength, would not lead any one to suppose that he was recovering from so severe a disease.

5th April.—Patient was going on very well up to yesterday evening. He was up all day. His appetite was good, and he felt quite well. No difference could be found between the two sides of the chest on auscultation, except the clear crepitaton before mentioned, which, however only occurred on very deep inspirations, and had become much more scanty. On percussion, but a very slight difference could be discovered between the two sides. Yesterday, however, he went out of the ward into the cold air (it was a sharp frost), and in the night had a return of pleuritic stitch in the right side.

6 P.M. P. 78.—Face not much flushed. Temperature of skin moderate. Thirst not great. Appetite good. On percussion, behind, on the right side, dulness in the lower half is increased in intensity, though not in extent. Breathing here between the vesicular and bronchial types. The crepitation before mentioned

still continues. In the right lateral region, dulness begins from the sixth rib, below which a loud rubbing sound occurs during inspiration and expiration. It is evident that the present relapse is owing to premature exposure to cold. The fever attending it, although it increased in the two or three succeeding days, never became more than sub-acute; and as we had at this time several severe cases under active hydropathic treatment, which demanded all our care and attention, I was reluctantly compelled to forego the use of cold water with this patient, having neither leisure nor attendance sufficient for properly carrying out the treatment. Patient was, therefore, from this time treated in the usual way, by cupping, blistering, &c. I was surprised to find that he had now great reluctance to submit to any but hydropathic treatment, and thought it very hard that he could not again have his bath. No unusual symptoms occurred during the progress of the case. The pleuritic effusion continued to increase for some days; and it was not until the 12th that it began to diminish. Up to this time he had been cupped twice and blistered once. It then gradually diminished, and he was able to leave the hospital.

The foregoing case is interesting in several particulars. From the way in which the disease began, and the symptoms present up to 30th March, there could be no doubt that it was a case of acute pleurisy. On 30th March, however, a new symptom shewed itself, a clear small crepitation over the part, which gave a dull sound on percussion. Did this indicate the presence of fluid in the smallest bronchi? If so, the bronchial breathing and dulness on percussion might indicate condensation of the lung, instead of compression by fluid, and pneumonia would be proved to exist as well as pleurisy. Now, the absence of all expectoration made me doubt the presence of pneumonia. This crepitation might be produced in the pleural cavity by the presence of soft lymph upon the opposed surfaces of the pleura. Indeed, though this sound is not nearly so commonly produced in the pleural cavity as the friction sound, yet it *does* occur; and I have several times heard it in cases where post-mortem examination proved the presence of such a layer of soft lymph and the absence of pneumonia. The progress of the case also left no doubt of its being one of pure pleurisy.

Another curious point in this case is, that with all the violent fever, the frequency of breathing should never have much increased. This may partly be accounted for by the remarkably large size of the man's chest, so that he had, as it were, more lung than he wanted for ordinary respiration. It must, however, be also attributed to the comparatively small amount of effusion, which was evidently checked by the treatment adopted.

Two errors were made in the management of this case, owing to my having had, at the time it occurred, but little experience in hydropathic practice. On the 30th, on being removed from the bath, a broad wet bandage, covered with a dry one, ought to have been applied round the chest of the patient, and frequently changed to keep up a constant abstraction of heat from the inflamed part. He was also allowed to remain too long in the blanket after the bath, so that he again became heated, and some of the good effect produced by the cooling was lost. Had these two errors not been committed, I believe that his recovery would have been still more rapid.

The relapse on the 5th April was evidently

quite a new attack, produced by exposure to cold. Many more pressing cases occupied just then so much of my time, that I found it impossible to give so much attention to this patient as I must have done had I continued to treat him by applications of cold water. But I have little doubt that, had it been possible for me to have continued them, he would have been well much sooner than by cupping, blistering, &c. The wet bandage round the chest and the wet-sheet packing frequently repeated, would have been the means I should have used.

CASE V.

ACUTE BRONCHITIS, COMPLICATED WITH PLEURISY.

The following is a case of acute bronchitis occurring in a strong, muscular subject, whose constitution, however, had been injured by intemperance. The cold shallow bath of long duration was the form of treatment used, and its effects in this case in mitigating the fever, and promoting sleep, were very striking. Slight

pleurisy also existed. This was not discovered till the day after his admission, but it probably was present on his admission, though overlooked from the attention being engrossed by the more severe disease. It is probable that the treatment adopted prevented the pleuritic effusion from increasing so much as to be itself a source of danger; at any rate, this case furnishes an additional proof that pleurisy is not aggravated by this mode of treatment.

CHARLES KLAUS, æt. 47. Labourer.

Has always enjoyed good health up to his present illness, which began eight days ago, with a feeling of chilliness, languor, loss of appetite, and increased thirst; cough, and difficulty of breathing were present from the first. The cough was violent, occurring in paroxysms which were generally terminated by expectoration. He states that the matter expectorated was never bloody. The difficulty of breathing has continued to increase up to the present time, and this, combined with the frequent occurrence of the paroxysms of coughing, has almost prevented him from obtaining any sleep for the

last week. The feeling of chilliness never amounted to an actual rigor. It has occurred almost every day, alternating with feverish heat. It came on during the first three days, especially whenever he went into the cold air, for he has only kept his bed altogether since the 31st March. Up to that time he had also slight diarrhœa, but this has ceased, since he has been entirely in bed.

Up to his admission no treatment had been adopted. He sought to relieve his burning thirst by large quantities of small beer and coffee, but carefully abstained from drinking cold water. He is, as a labourer, much exposed to the vicissitudes of weather, but cannot refer his present illness to any particular exposure. He has never had stitch in the side, or any pain in the chest, which cannot be accounted for by the straining caused by coughing.

At present, April 4th, 11 A.M., is a strong, thick-set, muscular man, looking as if he had been addicted to drinking, and this he allows to have been the case. Is perfectly rational, and has good courage. Face much flushed. Skin hot and dry. Tongue moist, with thin white fur. Abdomen normal, not enlarged. One motion yesterday.

Pulse 102, full and hard.

Respiration 32, cost.-abdom.

Breathing is deep, and laboured. During inspiration, slight contraction of the scaleni muscles. The cough occurs in paroxysms, which come on so frequently during the night as scarcely to allow him to obtain any sleep. Pressure on the trachea does not cause pain, nor produce inclination to cough. No pain in the chest, except the feeling of concussion produced by the violent fits of coughing. *Sputa* copious, muco-purulent, untransparent, tolerably homogeneous; the water in which they float is rendered turbid, but the pellets remain distinct.

Thorax.—Broad, well formed.

Lungs.—The sound on *percussion* from above downwards on the left side is clear in front down to the seventh rib. In the lateral region on left side, clear everywhere. On the right side in front, clear down to the seventh rib; in the lateral region, to the eighth; behind, on the left side, clear down to the twelfth rib; on the right, to the eleventh.

Auscultation.—Behind, on left side, in lower half, large crepitation. Higher up, vesicular

breathing. On right side, in lower half, large crepitation; higher up, the breathing is weak, in type between the bronchial and vesicular, with occasional sibilus.

Low diet. No medicine. As much cold water to drink as he fancies.

5 P.M. P. 88, full and hard; R. 36.

Skin hot and dry. Face much flushed, and, during a paroxysm of cough, becomes almost purple. *Sputa* copious, muco-purulent, homogeneous, frothy. Urine high-coloured, clear, intensely acid.

5^h 27^m P.M.—He was now placed in a shallow bath, temperature 77° Fahrenheit, with water up to the navel, (temperature of the air being 66°.) In this he was treated as was described in the last case.

5^h 37^m.—Temperature of the bath has risen to 80°. The skin on the trunk feels cool to the touch; in the axillæ, however, still feels warm.

5^h 46^m.—Temperature of bath was reduced to 77° by the addition of cold water.

5^h 50^m.—Temperature of bath 77°. Patient begins to complain of feeling cold. The appearance of goose skin is noticed on the chest.

5h 56m.—Temperature of bath still 77°. Patient continues to complain of cold, but no shivering has occurred. Lips pale. Ears bloodless. The pouring of the water over the head and chest was now discontinued, and the chest, back, and arms, were diligently rubbed by an assistant, who frequently wetted his hand in the water from the bath. The legs were at the same time vigorously rubbed, as had been done during the whole continuance of the bath.

6 P.M.—No change, appreciable to my hand, had occurred in the temperature of the skin. The axillæ are nearly as cool as rest of body, but the unpleasant feeling of cold of which patient complained has given place to one of comfortable warmth. Water was now again poured a few times over the head and chest. He was then removed from the bath at 6h 2m, rubbed dry, and placed in his bed, with usual bed-clothes, but not wrapped up in a blanket.

During the bath he behaved very well, himself assisted in the rubbing, and showed no desire to leave it before the time he was removed. While in the water *he had scarcely any cough*, which however, has been frequent since his removal.

6^h 6^m. P. 72.—Skin cool. Complains of feeling cold, but no shivering has occurred.

6^h 12^m. P. 72.

6^h 50^m. P. 72.—The patient still complains of feeling cold, but has not shivered.

10^h 30^m. P. 72; R. 30.—Skin cool to the touch, soft, and smooth. He seems very comfortable.

5th April, 9 A.M. P. 90, soft; R. 30.—(He has just had a fit of coughing, which has accelerated pulse and breathing.) After having been for some time without cough, P. 84.

Slept well last night for about eight hours, this being almost the first sleep he has had since his illness. The fits of coughing, instead of harassing him almost constantly, have only occurred four or five times during the night, and as soon as each paroxysm was over he immediately fell asleep again. Has coughed much this morning, but expectorates more copiously and with much greater ease. Sputa consist of a thick layer of frothy muco-purulent matter floating upon a nearly equally thick layer of turbid, milky, fluid. The vessel into which they have been spat contained no water previously. He complains of

slight superficial soreness on the front of his chest, probably due to the rubbing in the bath of yesterday. Skin not very hot, moist. A partial perspiration on the face and hands frequently appears after a paroxysm of cough. Thirst diminished. Has slight appetite.

Lungs—Percussion: On the right side, behind, in lower half, the sound is rather more dull and higher pitched than on the left side. In lateral region, as yesterday. On the left side, percussion as yesterday.

Auscultation: Behind, on left side, in upper half, loud vesicular breathing. Lower down, clear large crepitation. Behind, on the right side, in upper half, weak vesicular breathing. Lower down, large crepitation. In the lowest quarter, this crepitation is high pitched, and here bronchial breathing is heard. No bronchophony.

The inter-costal spaces at the base of the right side of the chest are not tender on pressure. Vocal thrill is equally indistinct on both sides.

From this examination it follows that, in addition to the acute bronchitis diagnosed yesterday, a morbid change is present at the base of the right lung behind. The increased dulness on

percussion, and the bronchial breathing, prove a diminution in the quantity of air contained in this part of the chest. This seems due to a pleuritic effusion rather than to a pneumonic infiltration. The crepitus heard in this part of the chest may be due merely to the presence of acute bronchitis. No pneumonic sputa can be found in the matter expectorated. Neither bronchophony nor the vocal thrill can give us any assistance in this case. That this really was a pleuritic effusion was subsequently proved, for, on the 11th April, during his convalescence, a loud rubbing sound became audible, at the spot before mentioned, and continued for several days.

9^h 45^m.—Shallow bath, 77° Fahrenheit, ten inches water. In this bath he was treated as yesterday.

9^h 55^m.—Temperature of water still 77°. Skin feels cool. Complains of a feeling of cold, which, however, subsided after having been rubbed with the wet hand for one or two minutes.

10^h 4^m. P. 84.—No longer complains of cold.

10^h 15^m. P. 86.—Does not complain of cold, and wishes to stay longer in bath. Was now taken out, rubbed dry, and put to bed with usual

amount of bed-clothes. Only coughed once or twice during the bath, but since his removal cough has been frequent. Had no shivering.

10^{h} 40^{m}. P. 66.—Cough frequent.

11^{h} 5^{m}. P. 68.—Whole body cool. No shivering.

5 P.M. P. 72.—Full and soft. Cough frequent, but expectorates more easily than yesterday. Face congested. Skin hot and dry, but soft. Sputa, as before. Complains much of hunger.

6th April, 10 A.M. P. 78.—Has slept well the whole night, with the exception of being awakened two or three times with coughing. *Sweated on the whole body all night, and is still in a general perspiration.* Sputa consisting of two layers, as yesterday. The muco-purulent layer is now considerably the thickest. Expectoration more easy than yesterday. Urine acid, somewhat turbid, high-coloured. Appetite very good.

6½ P.M. P. 76; R. 32.—Has just been coughing, but the cough is diminished in frequency, and is much looser. The general perspiration still continues. Feels perfectly comfortable.

7th April, 9 A.M. P. 72; R. 24.—Has continued sweating the whole night, and per-

spiration still continues. Slept well. Cough less frequent.

6 P.M. P. 70; R. 24.—Skin cool and soft, but is no longer perspiring. The perspiration diminished gradually, and finally ceased about 3 P.M. The sounds on auscultation and percussion much the same as on the last report.

8th April, 9 A.M. P. 62.—Slept well, and expectorates with ease. Has again been sweating in the night. Urine pale, acid, clear; in large quantities.

5 P.M. P. 64; R. 22.—Cough much less. Expectoration less copious, and more easy. Appetite very good. All the morbid signs on auscultation and percussion are diminishing. There is less crepitus, and the dulness in lower part of right side is materially less.

9th April, 9 A.M. P. 66; R. 24.—Appetite good.

5 P.M. P. 64.

10th April, 9 A.M. P. 68; R. 22.

5 P.M. P. 60.—Going on well, but expectoration still rather copious. Up to this time, has had no medicine of any sort.

11th April, 9 A.M.—Very little crepitus on

either side of the chest. In the lower part of right-side, behind, a loud rubbing sound is heard. This rubbing sound lasted for two or three days, but the patient was now convalescent, and in a few days left the hospital.

CASE VI.

TYPHUS COMPLICATED WITH SEVERE BRONCHITIS AND VIOLENT DELIRIUM.

The following is a case of typhus occurring in a drunkard, and complicated with acute bronchitis. This latter affection was indeed so severe, that it was at first considered the primary disease, and patient's habits of intemperance not being known, bleeding was unfortunately ordered. This was followed by loss of sleep and delirium. A five-grain dose of calomel, administered next day, purged him violently, and the effect of these two remedies was to bring on an attack of delirum tremens, without at all diminishing the fever or bronchitis. The cold superfusion in the warm bath was now resorted to,

and repeated six times, gradually increasing the number of buckets of cold water at each successive time. After every superfusion, patient became visibly quieter; and after the last he slept thirty-six hours continuously, and awoke perfectly rational. The force of the fever was now broken, and although no further treatment was adopted, it ran a very mild course. He continued to sleep soundly at night, and did not again become delirious. Convalescence was also very rapid.

It will be objected, I am well aware, to this mode of treatment, that it is far too troublesome to be generally adopted, and that it is not impossible that opium would have answered just as well in checking the delirium tremens, and producing sleep. But I appeal to the experience of any physician who has had the opportunity of treating many cases of delirium tremens, and I feel quite sure that most will agree with me in mistrusting the efficacy of opium, when the delirium is combined with high fever, as was the case with this patient. I give the case, however, as it occurred. There can be no doubt that the

superfusion *did* operate most favourably; and the symptoms were such, that I could not have ventured to give opium with much hope of success.

NICHAUS, æt. 27, labourer.—Admitted into the Charité Hospital, Sept. 28th, 1849.

A strong-built, muscular man. All that can be learned of his present illness is, that he has had cough for a fortnight, and has been confined to his bed for three days. It was only afterwards discovered that he was of most intemperate habits, and an inveterate spirit drinker. He is rational, but answers questions confusedly. Can only speak in a whisper. Does not know how long it is since he lost his voice. His strength is much diminished, but he can still sit up in bed for a short time. A tremulous motion is noticeable in his hands if he attempts to extend them. Is in a state of high fever. Face flushed. Skin dry; very hot. Cough very frequent, occurring in paroxysms, attended by scanty frothy mucous expectoration.

The chest, on percussion, gives everywhere a normal sound.

On auscultation, loud rhonchus and sibilus were heard in every part, but without crepitation. No eruption of any kind on the body.

Tongue moist; white. P. 104.

The case was diagnosed as one of acute bronchitis, and a bleeding was ordered.

Venesection of fourteen ounces.

Sept. 29th, 10 A.M. P. 98; R. 37.—The blood drawn yesterday is dark-coloured. The coagulum is large, soft, and exhibits no buffy coat. Fever unabated. Face flushed. Skin hot and dry. Complains of headache. Scarcely slept at all, and has been delirious during the night. Cough unabated.

Calomel, five grains every three hours.

30th Sept. 10 A.M. P. 102, full and soft; R. 38. —Signs on percussion and auscultation same as yesterday. Only took one dose of calomel yesterday, as this produced violent diarrhœa. He had fifteen thin yellow motions during the course of yesterday and last night. He had no sleep during the night, which he passed in a state of delirium, and was so violent that he had to be strapped down in bed. The delirium still con-

tinues. It is a strange mixture of typhoid delirium with delirium tremens. He generally lies on his back, muttering to himself, but at the least sound starts up, attempts to get out of bed, fancies he sees objects that are not present, as rats running over his bed. Frequently looks suspiciously behind and under his bed, imagining some enemy to be concealed there. His hands tremble much, as does his tongue when protruded. He answers questions readily, like a person with delirium tremens, but his answers are wide of the mark, and he does not know where he is. In the puzzled appearance of his countenance it is not difficult to recognise the stupor produced by the poison of typhus.

We now determined to try the effect of the cold superfusion in the warm bath, of the benefits of which, in cases of delirium tremens, we had already had proofs.

11^h 15^m. A.M.—Was placed up to the chin in water of temperature 95°. In this he was held down, while ten buckets of water, temperature 54°, were poured gently over his head. This proceeding lasted six minutes. The temperature

of the bath at the end was 75°. He was tolerably quiet during the bath, but towards the end evidently suffered pain from the cold to the head.

4½ P.M. P. 107; R. 42.—Countenance less stupid. Has been tolerably quiet since morning, but has not slept. Face flushed. Skin hot and dry. Diarrhœa has ceased. Cough continues. Can still only speak in a whisper.

Superfusion with ten buckets of water, temperature 54° in a warm bath.

Oct. 1, 10 A.M.—Has been delirious all night, frequently attempting to get out of bed. Does not know where he now is. Delirium of same character as yesterday. Face flushed. Skin hot and dry. Tongue dry. Has had four thin watery motions during the night. Signs in auscultation and percussion unaltered.

Numerous rosy blotches of the eruption of typhus fever on the chest, abdomen, and back.

10ʰ 15ᵐ A.M.—Placed in a warm bath of 96° Fahrenheit, and while in this twenty buckets of water, temperature 54°, were gently poured over his head, the temperature of bath being kept up

by the addition of warm water. At the end the temperature of the water in the bath was 76°.

5 P.M. P. 108; R. 38.—Temperature in axilla 41° C. Skin hot and dry. Countenance stupid. Has not slept. Has been delirious all the afternoon. Frequently attempts to get out of bed, but speaks little.

Warm bath of 93° Fahrenheit, in which he was treated as in the morning, twenty buckets of water being gently poured over his head, of temperature 54°, while the temperature of the bath was kept up by the addition of warm water.

2nd Oct. 10 A.M.—Slept for an hour and half after midnight, and though still delirious, is much more quiet and rational than yesterday. Skin hot and dry. Fever spots continue. Tongue furred, moist. One motion during the night. Cough continues frequent, with expectoration of gray, semi-transparent mucus. Voice still a mere whisper.

Superfusion of twenty buckets in warm bath of 93°.

5 P.M. P. 102; R. 38.—Has been quiet ever

since the bath in the morning. Has had a few minutes' sleep this afternoon, and at present seems drowsy. Skin hot and dry.

Superfusion of thirty buckets, temperature 54°, in warm bath temperature 96°.

3rd Oct. 10 A.M. P. 98; R. 36.—Shivered for about half an hour after the bath last night, then fell asleep, *and has slept soundly the whole night.* He is still sleeping quietly. When roused, he is perfectly rational, but instantly goes to sleep again. Skin dry, but not so hot as yesterday. Cough frequent.

4 P.M. P. 96; R. 40.—Has been sleeping quietly the whole day.

4th Oct. 10 A.M. P. 96; R. 37.—Has slept soundly all night. Is now perfectly rational. Countenance natural. Face less flushed. Tongue moist. Cough continues. Rhonchus, sibilus, and large crepitation are audible on auscultation of chest.

5 P.M. P. 107; R. 40.—Temperature in axilla 40.7 C. Face much flushed. Skin hot and dry. Is more restless. Owing to circumstances, the bath could not be obtained, or the superfusion would have been repeated.

5th Oct. 11 A.M. P. 86, full; R. 37.—Slept well, and has not been again delirious. Answers questions rationally, but slowly. Countenance expresses stupidity.

From this time the disease took a very mild course. The high temperature, the increased frequency of pulse and respiration, with the catarrh, eruption, and aphonia began to diminish on the 11th October. On the 14th the pulse was 84; respiration 18; and he began to complain of hunger. He left the hospital on the 18th, to go and recruit his strength at his own home.

The delirium and loss of sleep never returned during the remainder of the fever, so that after the last superfusion on the 2nd October the case was left entirely to nature.

No hydropathic or other treatment again became necessary.

He took no medicine or stimulus of any kind.

CASE VII.

EXTENSIVE ORGANIC DISEASE OF THE HEART, ACCOMPANIED BY INTENSE CONGESTION OF THE BRAIN.

Treated by abstraction of blood and the cold superfusion in the warm bath.

EPLE, æt. 68.

A large, heavy, strong-built, muscular man. Has for some years suffered from organic disease of the heart, for which he has several times been admitted into the Charité Hospital. For the last year he has been under almost constant observation. The diagnosis was great hypertrophy of the heart caused by regurgitant disease of the mitral valve. The following symptoms have been long present: Constant shortness of breath, increased on any slight exertion. Frequent palpitations. Irregular pulse—a loud systolic bellows-sound, loudest at the apex, and accompanied by a strong thrill. The second sound over the pulmonary artery increased in strength. The impulse of the heart against the chest is strong and heaving. Præcordial dulness

on percussion, considerably increased in extent. Apex of the heart broader than natural, and strikes considerably to the left of its normal position.

He was admitted in January, suffering from anasarca, which subsided under the use of diuretics, and he began to move about the ward, but the dyspnœa and dropsy began again to increase in April, 1850.

April 22nd.—The dyspnœa has been so great for the last few days, that he has not been able to breathe unless supported and propped up in bed day and night. This morning we found him apparently dying. He was perfectly unconscious, and could not be roused even by pinching. Pupils natural. Breathing very imperfect, and rapid. Pulse small, thready, and exceedingly irregular. The dropsy has increased to an alarming extent, and his face and extremities are bloated, and of a dark livid colour.

Venesection of six ounces.

Ten leeches behind his ears.

Some of the symptoms which most immediately threatened life, diminished during the day. The breathing became somewhat more

easy; the livid, venous tinge of skin diminished in intensity, as also did the dropsy; but he continued up to the evening in a state of profound stupor, completely unconscious of all that was passing around him. The blood drawn was quite black. The coagulum large, loose, and without buffy coat. The leeches all took well, and the after-bleeding from the bites was considerable.

23rd April, 10 A.M. P. 80, fuller and more regular.—The purple colour has disappeared from the skin, and the dropsy is much diminished. The stupor also disappeared during the night, but was replaced by delirium, which has gradually become more violent. At present he is delirious, frequently attempting to get out of bed, tossing his arms about, and talking the wildest nonsense.

11 A.M.—Put into a bath of 93° Fahrenheit, water reaching up to the nipple; and while sitting in this, twenty buckets of cold water, temperature 52°, were gently poured over his head, his chest being protected from the cold water by a piece of Mackintosh, and the temperature of the bath being maintained by the occasional addi-

tion of warm water. He was very unruly, and struggled violently in the water. Towards the end of the bath, during the superfusion of the last few buckets, became quieter. He was removed, dried, and put to bed. No *immediate* effect was produced on his delirium, but, in the afternoon, he put out his tongue when desired to do so, and had an indistinct knowledge of being in the hospital.

6½ P.M.—Superfusion of twenty buckets of water, 52°, in warm bath of 93°. Was much quieter than in the morning, though he still struggled and attempted to get out of the bath. After the bath he continued delirious till 8 P.M., when he went to sleep, and *slept the whole night, with but few interruptions, in which he was rational.*

24th, 10 A.M.—Awoke at 6 A.M., from which time to 8½ he was perfectly rational, knew that he was in the hospital, but did not remember anything of yesterday's proceedings. Since 8½, has again been delirious, though much more quiet than yesterday. Does not now know that he is in the hospital, and wants to get up, and go to his own room.

11^h 10^m.—Superfusion of ten buckets, 52°, in warm bath of 93°. This lasted seven minutes. He was quiet under it. Directly afterwards, he knew Dr. Traube, and told him, on being asked, the street and number of the house where Dr. T. lives. He expresses a desire for food.

5 P.M.—Was quiet for several hours after last bath, but did not sleep, having probably been prevented by the over-excitement caused by seeing his friends. He frequently moves his hands, and talks about seeing money and other objects on the bed. P. 80, large and soft. Has had two motions to-day, in consequence of a dose of catsor-oil taken in the morning. No hot water for the bath could be obtained this evening; it therefore was not used.

Ice to the head.

25th, 10 A.M. Pulse 84.—Is perfectly rational; knows Dr. Traube and myself.

Up to 12 P.M. last night he was very restless. The rattling of the ice on his head when he moved caused great disturbance, for he had a notion that the ice was a large stone on his head. It was therefore discontinued at 11 P.M., and cloths wrung out of cold water substituted

until 12, when he became quiet; the cloths were removed, and he slept soundly till nine this morning.

26th, Pulse 84, tolerably regular.—Slept well, and is quite rational. Is to take a purgative to-day. In two or three days he was up again, walking about the ward, and as well as before his attack, which never again returned. In a few days more he left the hospital, and died some months afterwards from the disease of the heart. A post-mortem examination proved that the diagnosis of this disease had been correct.

The preceding case was one of very extensive organic disease of the heart, in which the circulation became so obstructed through the lungs, brain, and general system, that at one time I did not believe it possible for the patient to live more than one or two hours. Here the relief arising from the abstraction of blood was well marked. When the mass of the blood was by this means somewhat diminished, the heart, which before had been so overfilled that it had almost come to a stand-still, began again to beat with vigour. The blood contained in the congested lungs again flowed more freely to the left

chambers of the heart. The oxygenation of the blood became more perfect. The congestion of the brain, giving rise to the deep stupor, also diminished, as did that of the tissues throughout the body, which had occasioned the increase of dropsy and livid colour of the skin.

But although the loss of blood had been of great service, the supervention of delirium proved that the brain had now become irritable, and, had the bleeding been repeated, the patient would in all probability have died.

Under these circumstances, the cold superfusion answered every end that could have been desired. It procured the patient sound sleep, and a cessation from the violent delirium which must soon have exhausted the powers of life, so that in a day or two he had completely recovered his previous health and strength.

The organic disease of the heart, of course, remained unchanged, and in a few months carried the patient off; but I am persuaded that the prolongation of his life, for these few months, was due to the means of treatment employed.

This case is an interesting one, as tending to

show that where hydropathic measures are strongly called for by the circumstances of the case, disease of the heart, even of the most serious nature, does not necessarily forbid their employment.

THE END.



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